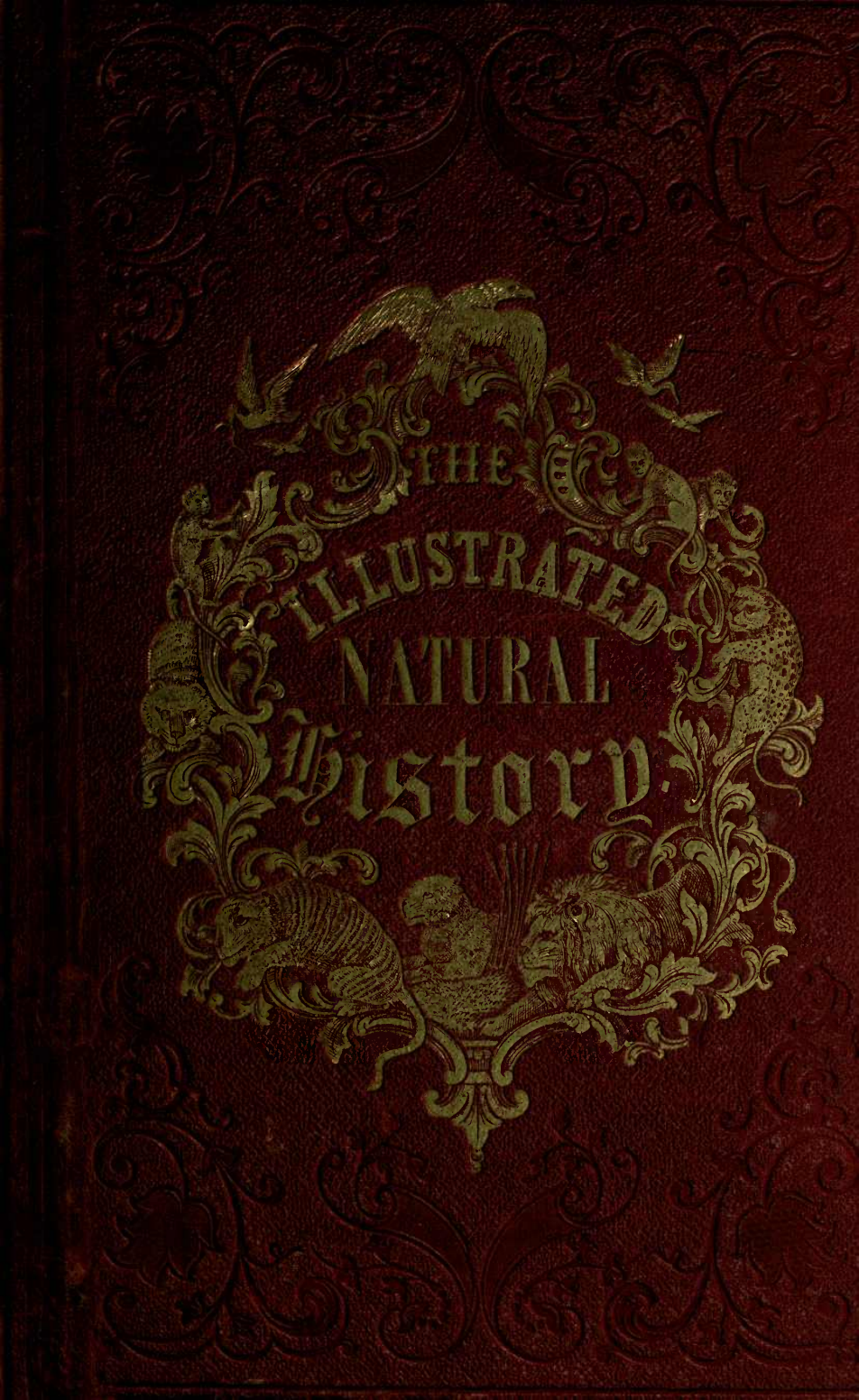
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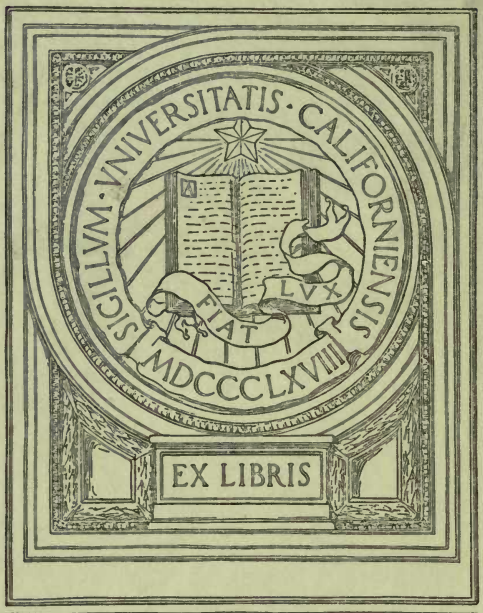

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THREE KINGDOMS.

CONTAINING

SCIENTIFIC AND POPULAR DESCRIPTIONS OF MAN, QUADRUPEDS, BIRDS, FISHES, REPTILES, INSECTS, &c.

EDITED AND COMPILED

BY A. B. STRONG, M. D.,

Author of "The American Flora."

VOLUME I.

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In presenting to the American public an illustrated work on Natural History, the Publisher begs leave to call the attention of the reader to the enormous price demanded for standard works upon all departments of Natural Science, and the great difficulty of obtaining access to the most valuable American and Foreign publications. These are certainly obstacles which ought, if possible, to be removed, as they have been a serious discouragement to the studies of the naturalist, and the largest portion of the reading community. Many are the authors who have mixed up in their numerous volumes, details of their travels and voyages, scientific facts and disquisitions of much importance; but all which are not available, unless by the purchase of large and expensive works.

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The editorial department is entirely under the charge of Dr. A. B. Strong, who has already availed himself of the assistance of several of the most scientific naturalists of the present time, whose co-operation has been secured. It

will be his especial aim to make the history of the objects described, not only interesting and intelligible to the general reader, but of practical utility to the student and scientific naturalist, by means of plates, carefully colored, and descriptions embracing the most interesting facts and anecdotes respecting the habits of the objects represented.

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Lion Lioness and Cubs.

THE LION.

Felis Leo.

PLATE I. MALE. PLATE II. FEMALE AND YOUNG.

NUMEROUS accounts of this formidable cat have been given in the various illustrated works on natural history, most of which convey to us a certain knowledge of the character, form, and appearance of the animal, yet, they fall far short of giving that general description, so desirable to the student or naturalist. The outward form of the lion seems to speak the superiority of his internal qualities. His figure is bold and striking, his look confident, his gait proud, and his voice terrible. His stature is not overgrown, like that of the elephant, or the rhinoceros; or clumsy, like that of the hippopotamus, or the ox, but is in every respect compact and well-proportioned, and a perfect model of strength joined with agility.

The lion at present is an inhabitant of the greater part of Africa, and the warmer districts of India. In the days of antiquity, the range seems to have been more extended, and reached to the European boundary, and were even found in the mountains of northern Greece. In Africa, they may now be said to be extirpated in the line of the coast, and nearly mark the boundary of civilization; while Mr. Bennet remarks, that "In the sandy deserts of Arabia, and in some of the wilder districts of Persia, also in the vast jungles of Hindostan, he still maintains a precarious footing; but from the classic soil of Greece, as well as from the whole of Asia Minor—both which were once exposed to his ravages—he has been utterly dislodged and extirpated."

Africa exhibits the lion in all his grandeur; and in many an unknown desert, he reigns with undisputed sway over the more feeble races. Here he appears most powerful, and of the greatest size and fierceness; his disposition bold and fearless. There appears to be two or three varieties indiscriminately scattered over the country, and in the descriptions of the animals of southern Africa, two kinds more are also mentioned—the yellow and the brown, or as the Dutch colonists call them—the blue and the black, both of which are analagous with the northern varieties. One of the above mentioned species is the Barbary lion, the hair of which is of a deep yellowish brown, the mane and hair upon the breast and inside of the fore legs being ample, thick, and shaggy; while in the Bengal variety, the color of the body is of a much paler tint; the mane is considerably less, does not extend so far upon the shoulders, and is almost entirely wanting upon the breast and inside of the legs. A third variety of this animal seems also to exist, in which the mane is nearly or quite black. It appears to have been one of those which Mr. Burchel encountered. They are reckoned by the Hottentots to be the most ferocious and daring: an opinion which may be perhaps heightened by the dark and formidable appearance given by their shaggy covering.

The principal characters of the male lion of both continents, is the presence of a shaggy mane, and a tuft at the end of the tail; these marks at once distinguish him from all his congeners. The young males do not receive these appendages for some time, and they increase in length and thickness with their age. According to the account of Cuvier, "it is nearly the third year when they begin to to appear; and it is not before the seventh or eighth that they attain their full and bushy grandeur." When newly whelped, the fur of the lion is of a woolly or frizled texture; the shade of color a little darker than at a more advanced

period, and they are distinctly clouded or brindled with deep brown, and have a line of the same dark color running along the centre of the back, which begin to disappear about the commencement of the second year.

The length of a full-grown, dark-colored, African lion, is oftentimes from eight to nine feet; and the height at the shoulder nearly five. This, however, is rather above the average size. The lioness is considerably smaller than the lion, and her form more slender and graceful; but the great distinction between the sexes, is the absence of the ample mane, and the lengthened hair which adorns the other parts of her body. In her motions, the lioness displays more agility, and in the exercise of the various passions, seems much more impetuous. The breeding places of the lioness, in a wild state, are generally selected with great care in some deep cover, and all around so closely watched, that a transgression of the prescribed boundary would speedily call forth an attack. "Previous to her having young; but more especially from the moment she becomes a mother, the native ferocity of her disposition is renovated, as it were, with tenfold vigor; and wo to the wretched intruder, whether man or beast, who should unwarily at such a time approach her sanctuary."

A similar restless solicitude, but much less fierceness, was exhibited by a lioness, which had young in the Parisian managerie, and although she allowed the keeper to enter her den and administer to her wants, a nearer approach or interference with the cubs would have been dangerous. When disturbed by visitors, she displayed the greatest anxiety, and would carry her cubs round the cage for an hour at a time, much agitated and apparently wishful to conceal them. This anxiety begins to diminish about the fifth month. In India, where the character of the low country is more that of a thick jungle than of an open plain, he has more ample shade; but in the arid plains of Africa,

where the cover mostly fringes the banks of the rivers, or marks the spot of some spring of the desert, he is more frequently seen; he is satisfied with a less extensive protection, and is often disturbed from a patch of brush or rushes. Burchel met with a pair in such a situation as this, which was, perhaps, one of his most dangerous encounters throughout his long and varied travels, and in which his presence of mind brought him off unhurt.

"The day was exceedingly pleasant, and not a cloud was to be seen. For a mile or two, we travelled along the banks of the river, which in this part abounded in tall mat-rushes. The dogs seemed much to enjoy prowling about, and examining every bushy place, and at last met with some object among the rushes which caused them to set up a most vehement and determined barking. We explored the spot with caution, as we suspected, from the peculiar tone of their bark, that it was, what it proved to be, lions. Having encouraged the dogs to drive them out —a task which they performed with great willingness—we had a full view of an enormous black-maned lion and lioness. The latter was seen only for a minute, as she made her escape up the river, under cover of the rushes; but the lion came steadily forward, and stood still to look at us. At this moment, we felt our situation not free from danger, as the animal seemed preparing to spring upon us, and we were standing upon the bank at the distance of only a few yards from him, most of us being on foot, and unarmed, without any visible possibility of escaping. I had given up my horse to the hunters, and was on foot myself; but there was no time for fear, as it was useless to attempt avoiding him. I, however, stood well upon my guard, holding my pistols in my hands ready for fire, and those who had muskets kept themselves prepared in the same manner. But at this instant the dogs boldly flew in between us and the lion, and, surrounding him, kept him

at bay by their violent and resolute barking. The courage of these faithful animals was most admirable; they advanced up to the side of the huge beast, and stood making the greatest clamor in his face, without the least appearance of fear. The lion, conscious of his strength, remained unmoved at their noisy attempts, and kept his head turned towards us. At one moment, the dogs perceiving his eye thus engaged, had advanced close to his feet, and seemed as if they would actually take hold of him; but they paid dearly for their imprudence, for, without discomposing the majestic and steady attitude in which he stood fixed, he merely moved his paw, and, at the next instant, I saw two lying dead. In doing this, he made so little exertion, that it was scarcely perceptible by what means they had been killed. Of the time which we gained by the interference of the dogs, not a moment was lost: we fired upon him; one of the balls passed through his side, just between the short ribs, and the blood began to flow, but the animal still remained standing in the same position. We had now no doubt that he would spring upon us; every gun was instantly reloaded; but happily we were mistaken, and were not sorry to see him move quietly away, though I had hoped in a few minutes to have been able to take hold of his paw without danger."

The appearance of the lion, unannoyed, or in confinement, where he is generally very tame, does not convey to us that idea of ferocity which generally associates itself with the greater number of the feline race. His ample front and overhanging brows, surrounded with a long and shaggy mane, remind us of something more majestic than ferocity; but the gleam from his eye on the slightest motion of the bystander, the expression of his countenance and erection of his mane upon provocation, show that he will not be trifled with, and are sufficient intimations of the powers he is able to call to his assistance. The general

form of the lion is stronger in front than the proportions of his congeners; his broad chest and shoulders, and thick neck, at once point out his superior strength to seize and carry off a prey of even greater weight than himself.

We shall first notice the lion in its wild or natural state, and afterwards the influences acquired over him by the ingenuity and tuition of man. In the actions of all animals, the influence of hunger has a very powerful and passionate effect; and the attributes of cruelty which have generally been given to his race, have been called forth by his search after natural sustenance. In like manner, they are endowed with cunning and daring; accordingly we find animals of such size and bulk as the lion and tiger, endowed with powers sufficient to overcome other animals, both great and strong. When not pressed by the severe calls of hunger, the lion feeds chiefly at dawn and twilight, and is easily disturbed; he is nevertheless abroad during the whole of the night, and prowling around the herds of wild animals, or near the flocks of the settlers, or caravans of travellers, watching an opportunity, and seizing upon some straggler, carries it to his place of repose, where he devours it at his leisure. But impelled by the cravings of hunger —which the scarcity of wild animals, and the care of the colonists sometimes force him to endure—he becomes a very different animal; his cunning becomes daring; no barrier will withstand him; he rushes with resistless fury upon the object of his attack; a bullock is torn from the team, or a horse from the shafts; and even man is dragged from the watch-fire, surrounded by his companions and powerful instruments of war.

Perseverance in watching, and in retaining his prey when seized, are other characteristics of the lion. An instance of the latter is related by Phillips, and taken from his researches in South Africa. "The wagons and cattle had been put up for the night, when, about midnight, they

got into complete confusion. About thirty paces from the tent stood a lion, who, on seeing us, walked very deliberately about thirty paces farther behind a thorn bush, carrying something with him which I took to be a young ox. We commenced firing into the bush; the south wind blew strong, the sky was clear, and the moon shone very bright, so that we could perceive anything at a short distance. After the cattle had been quieted again, and I had looked over everything, I missed the sentry from before the tent. We called as loudly as possible, but in vain; nobody answered, from which I concluded he was carried off. Three or four men then advanced very cautiously to the bush, which stood nearly opposite the door of the tent, to discover, if possible, what had become of the man, but returned instantly in the utmost consternation;—the lion, who was still there, rose up, and roared furiously. About a hundred shots more were fired at the bush, without perceiving anything of the lion: this induced one of the men again to approach it with a firebrand in his hand; but as soon as he reached the bush, the lion roared terribly, and leaped at him, on which he threw the firebrand, and the people having fired about ten shots, he immediately retired to his former station.

"The firebrand which he had thrown at the lion, had fallen in the midst of the bush, and, favored by the wind, began to burn with a great flame, so that we could see very clearly into and through it. We continued our firing until the night passed away, and the day began to break, which animated every one to fire at the lion, as he could not lie there without being entirely exposed. Several men posted at the farthest wagons, watched to take aim at him as he came out. At last, before it became quite light, he walked up the hill with the man in his mouth, when about forty shots were fired at him without molesting him in the least. He persevered in retaining his prey amidst the fire and shot, and amidst it all, carried it securely off."

His strength on these occasions is immense, and there seems good authority for his being able to drag away a heavy ox: a young heifer is carried off with ease. Sparman relates an instance of a lion, at the Cape of Good Hope, "seizing a heifer in his mouth, and, though the legs dragged upon the ground, yet he seemed to carry her off with the same ease as a cat does a rat. He also leaped over a broad dyke with her, without the least difficulty." The smaller prey is generally thrown upon the shoulder, and carried with perfect ease. Thompson, a recent traveller in South Africa, saw a very young lion convey a horse about a mile from the spot where he had killed him; and relates a still more extraordinary instance of strength, which occurred in the Sneeuwberg. "A lion having carried off a heifer of two years old, was followed on the track for fully five hours, by a party on horseback, and throughout the whole distance, the carcass of the heifer was only once or twice discovered to have touched the ground."

The most common and favorite prey of the lion, is the various species of deer and antelope, which abound in the plains of Africa and jungles of India. The zebra and quagga, bullock and buffalo, are also frequent victims; but the latter often proves the victor. It is a common opinion among the South African tribes, that the lion will prefer a human prey to any other—will single out the driver from his cattle, and prefer the rider to his horse. This opinion has gradually gained converts among the better informed; and in many of the colonies it is generally received as a fact. Sometimes he will seize anything that he can; but animals are certainly his favorite luxury, and none more so than a horse—the pursuit of which, among other cattle, has given rise to the idea, that the rider most attracted his attention. In coroboration of this, Thompson relates an incident which befel a boor, who resided in the neighborhood of his own farm in the colonies.

"Lucas Van Vunsen, a boor, was riding across the open

plain, near the Little Fish River, one morning about day-break; and observing a lion at a distance, he endeavored to avoid him by making a wide circuit. There were thousands of spring brooks scattered over the extensive flats; but the lion, from the open nature of the country, had been unsuccessful in hunting. Lucas soon perceived that he was not disposed to let him pass without further parlance, and that he was rapidly approaching for an encounter: he being without his rifle, and but little inclined for any closer acquaintance, immediately turned off at right angle, laid his whip freely to his horse's flanks, and galloped for life. But it proved too late: the horse was tired, and bore a heavy man upon his back: the lion was fresh and furious with hunger, and came down upon him like a thunderbolt. In a few moments he overtook, and springing up behind Lucas, brought horse and man in an instant to the ground. Luckily the poor boor was unhurt; and the lion was too eagar in worrying the horse, to pay any immediate attention to the rider;—hardly knowing how he escaped, he contrived to reach the nearest house in safety."

Hunting the lion in Africa, is generally pursued for the sake of destroying the animal only, without any view of sport. A regular hunt, when the people turn out, is a complete scramble; a mixture of men of various figures and complexions; the dogs innumerable, and of every kind. Thompson relates a hunt which he himself witnessed, and which will give some idea of the danger attending these exploits.

"I was residing on my farm, located on Bavion's River, in the neighborhood of which numerous herds of large game, and consequently beasts of prey, are abundant. One night, a lion—who had previously purloined a few sheep out of the yard—came down and killed my riding horse, about a hundred yards from the door of my cabin.

Knowing that the lion, when he does not carry off his prey, usually conceals himself in the vicinity, and is, moreover, very apt to be dangerous, by prowling about the place in search of more game, I resolved to have him destroyed or dislodged without delay. I therefore sent a messenger round the location, to invite all who were willing to assist in the foray, to repair to the place of rendezvous as speedily as possible. In an hour, nearly every man in the party appeared, ready mounted and armed, with a reinforcement of about a dozen Hottentots, who resided at that time upon our territory, as tenants or herdsmen; an active and enterprising, though rather unsteady race of men.

"The first point was to track the lion to his covert, which was effected by a few of the Hottentots on foot. Commencing from the spot where the horse was killed, we followed the spoor through grass, gravel, and brushwood, with astonishing ease and dexterity, where an inexperienced eye could discover neither foot-print nor mark of any kind; until, at length, we fairly traced him into a large bosch, or struggling thicket of brushwood and evergreens, about a mile distant.

"The next object was to drive him out of this retreat, in order to attack him in a close phalanx with more safety and effect. The approved mode in these cases is to torment him with dogs till he abandons his covert, and stands at bay in the open plain. The whole band of hunters then march forward together, and fire deliberately, one by one, till he falls: should he not, but grow angry and turn upon his enemies, they must stand close in a circle, and turn their horses' rear outward; some holding them fast by the bridles, while the others kneel to take a steady aim at the lion as he approaches—sometimes up to their very heels, couching every now and then, as if to measure the distance and strength of his enemies. This is the moment to shoot him in the forehead, or some other mortal part. If they

continue to wound him ineffectually, till he becomes furious and desperate; or if the horses, startled by his terrific roar, grow frantic with terror, and burst loose, the business becomes rather serious, and may end in mischief; especially if all the party are not men of courage, coolness, and experience.

"In the present instance, we did not manage matters quite so scientifically. The Hottentots, after recounting to us all these and other sage laws of lion-hunting, were themselves the first to depart from them. Finding that the few indifferent hounds we had made little impression on the enemy, they divided themselves into two or three parties, and rode round the jungle, firing into the spot where the dogs were barking near him, but without effect. At length, after a few hours spent about the bush, the Scotch blood of some of my countrymen began to get impatient, and three of them announced their determination to break in and beard the lion in his den, provided, three of the Hottentots (who were superior marksmen) would support them, and follow up the fire, should the enemy venture to give battle. Accordingly, in they went to within fifteen or twenty paces of where the animal lay concealed, among the roots of a large evergreen; the Scottish champions let fly together, and struck—not the lion, as it afterwards proved, but a great block of red stone, beyond which he was actually lying. Whether any of the shot actually grazed him, is uncertain; but, with no other warning than a furious growl, he bolted forth from the bush. The rascally Hottentots, instead of pouring in their volley upon him, instantly turned and ran helter skelter, leaving him to do his pleasure upon the defenceless Scots, who, with empty guns, were tumbling over each other, in their hurry to escape the clutch of the rampant savage. In a twinkling he was upon them, and, with one stroke of his paw, dashed the nearest to the ground. The scene was

terrific! There stood the emperor of the forest, with his foot upon his prostrate foe, in defiance of whatever might come; looking round in conscious pride upon the bands of his assailants, and with a port the most noble and imposing that can be conceived. It was the most magnificent spectacle I ever witnessed; but the danger of our friends, rendered it at the time too terrible to enjoy. We expected every moment to see one or more torn in pieces, especially the man under his foot; although the rest of the party were standing within fifty paces, with their guns leveled, yet we dare not fire—one man being still under his feet, and the others scrambling towards us in such a way, as to intercept our aim. All this passed far more rapidly than I have described it; but, luckily, the lion, after steadily surveying us for a few seconds, seemed willing to quit on fair terms, and, with a fortunate forbearance, turned calmly away. Driving the dogs like rats from among his heels, he bounded over the adjoining thicket, like a cat over a footstool, clearing brakes and brushes, twelve or fifteen feet high, as readily as if they had been tufts of grass, and, abandoning the jungle, retreated towards the mountains—leaving the man unhurt, except a small bruise on his back, and a slight scratch on the ribs, from the force with which the animal had dashed him to the ground."

Such is the usual way of attempting to destroy, rather than hunt, this mighty beast; and many loose their lives in the chase. A very authentic account is given, in which "Diederik Muller, a boor, (one of the most intrepid and successful modern lion-hunters in South Africa,) had been out, alone, hunting in the wilds, when he came suddenly upon a lion, which, instead of giving way, seemed disposed, from the angry attitude he assumed, to dispute with him the dominion of the desert. Diederick instantly alighted, and, confident of his unerring aim, leveled his piece at

the forehead of the lion, who was couched in the act of springing, within fifteen paces of him; but at the moment the hunter fired, his horse (whose bridle was round his arm) started back, and caused him to miss. The lion bounded forward, but stopped within a few paces, confronting Diederik, who stood defenceless, his gun discharged, and his horse running off. The man and the beast stood looking each other in the face for some moments. At length the lion looked backward, as if to go away. Diederik began to load his gun, the lion looked over his shoulder, saw what he was doing, growled and returned back; the boor stopped loading and stood still; the lion again moved cautiously off, when the boor proceeded again to charge his rifle; the lion again looked back and growled angrily, and returned; the boor again stopped loading, and the lion turned away. This occurred repeatedly, until the animal had got off to some distance, when he took fairly to his heels and bounded away."

The following relation of an encounter of another kind, taken from the Naturalist's History, will still more forcibly exhibit the coolness and presence of mind of the South African boor upon any trying emergency, or unexpected attack from wild beasts; and at the same time show, that the lion will occasionally seek his prey during the day, and near the haunts of men.

"When passing near the Riet river-gate, and while our oxen were grazing, Van Wyk, the colonist, related to us the following interesting circumstance: 'It is now,' he said, 'more than two years since, in the very place where we now stand, that I ventured to take one of the most daring shots that was ever hazarded. My wife was sitting within the house, near the door; the children were playing about her; and I was without, busily engaged in doing something to a wagon, when suddenly, though it was mid-day, an enormous lion appeared; came up, and

laid himself quietly down in the shade, upon the very threshold of the door. My wife, either frozen with fear, or aware of the danger attending any attempt to fly, remained motionless in her place, while the children took refuge in her lap. The cry they uttered immediately attracted my attention. I hastened towards the door; but my astonishment may well be conceived, when I found the entrance to it barred in such a way. Although the animal had not seen me, unarmed as I was, escape seemed impossible; yet I glided gently—scarcely knowing what I went to do—to the side of the house, up to the window of my chamber, where I knew my loaded gun was standing, and which I found in such a condition, that I could reach it with my hand—a most fortunate circumstance; and still more so, when I found that the door of the room was open, so that I could see the whole danger of the scene. The lion was beginning to move, perhaps with the intention of making a spring. There was no longer any time to think. I called softly to the mother not to be alarmed; and, invoking the name of the Lord, fired my piece. The ball passed directly over the hair of my boy's head, and lodged in the forehead of the lion, immediately above his eyes, which shot forth, as it were, sparks of fire, and stretched him on the ground, so that he never stirred more.' Indeed, we all shuddered as we listened to this relation. Never (as he himself observed) was a more daring attempt hazarded. Had he failed in his aim, mother and children were all inevitably lost: if the boy had moved, he would have been struck with the ball: the least turn in the lion, the shot would not have been mortal to him."

Such is lion-hunting in Africa. When practised in India, it is attended with every concomitant of Eastern pomp and show. The numbers of the tiger also afford a good substitute, and a description of the pursuit of that animal (which we shall give in its history hereafter,) will convey to

the reader an idea of the chase of the lion: they are all attended with the same hair-breadth escapes, and exciting adventure; the same mixed array of noise and followers. We shall only add one or two anecdotes from the above mentioned sketches, which will illustrate a situation in which the hunters of wild beasts may occasionally find themselves placed.

Captain Mundy relates a case, where he says: "A lion having chased my hero's elephant, and he having wounded him, was in the act of leaning in order to fire another shot, when the front of the houdah suddenly gave way, and he was precipitated over the head of the elephant into the very jaws of the furious beast. The lion, though severely hurt, immediately seized him, and would doubtless shortly have put a fatal termination to the conflict, had not the elephant, urged by the mahout, stepped forward, though greatly alarmed, and grasped in her trunk the top of a young tree, bent it down across the loins of the lion, and thus forced him to quit his hold. My friend's life was thus preserved; but his arm was broken in two places, and he was severely clawed on the breast and shoulders."

From the above observations and anecdotes—which have almost exceeded our limits—ws will conclude by giving him a brief notice while in a state of confinement, or nearly to that of domestication; for most of those which have been exhibited, or which are now to be seen—either in Europe or this country—have been taken young, aud grown up under the tuition of man; and hence, have not acquired these propensities which example and necessity render so very marked in their native wilds. The lion, when taken young, is easily tamed; principally by mild and persuasive usage; and appears to possess more equality of temper than any of the other cats, with which an acquaintance of intimacy has been formed. The more manageable he can be made, the more valuable he is to his proprietor, who

puffs in his bills the feats he performs, and the liberties he will allow. Great pains is therefore taken in his education or training, and the animal really becomes attached, and appears to go through his exhibitions with a sort of pleasure." A lion called "Nero, (well known in Wombell's managerie,) was of a remarkably mild disposition, and allowed his keepers every liberty. Strangers were frequently introduced into the den, which became a nightly exhibition—the visitors riding and sitting on his back. Nero, during the while, preserved a look of magnanimous composure; and on the entrance or exit of a new visitor, would merely look slowly round."

From these and many other interesting accounts of a similar character, it appears that the lion—with all his native ferocity—can be subdued by the ingenuity and tuition of man. A fear or regard for the master or keeper is always manifested; and there are many instances, after long absence, of marked pleasure being shown on meeting again. Major Hamilton Smith relates an anecdote which came under his own observation, showing great deference for the keeper.

"A keeper of wild beasts in this city (New-York), had provided himself, on the approach of winter, with a fur cap. The novelty of his costume attracted the notice of the lion, who, making a sudden grapple, tore the cap off his head as he passed the cage; but perceiving the keeper was the person whose head he had thus uncovered, he immediately lay down. The same animal once hearing a noise under his cage, passed his paw through the bars, and actually hauled up the keeper, who was cleaning beneath; but as soon as he perceived that he had ill-used his master, he instantly lay down upon his back, in an attitude of complete submission."

By great attention to cleanliness and feeding, and the general health of the animal, the proprietors of several

menageries--both in Europe and this country—have succeeded in procuring litters from the lioness in confinement; but many of the young are lost during the time of shedding their milk-teeth. For the first month, they are very easily reared, and are remarkably playful; but their strength soon unfits them for playmates, and their natural dangerous propensities become developed at an early period. It is related of two being bred in this country in the year 1820, belonging to a travelling menagerie, which exhibited all the playfulness of kittens; but their dispositions were early displayed in the murder of a cardinal grossbeak, which was dragged through the wires of their cage and devoured, in the absence of the keeper. Their size and strength increased rapidly; and in riotous play, the unintentional protrusion of their claws produced sensations which taught that ere long they could tear severely.

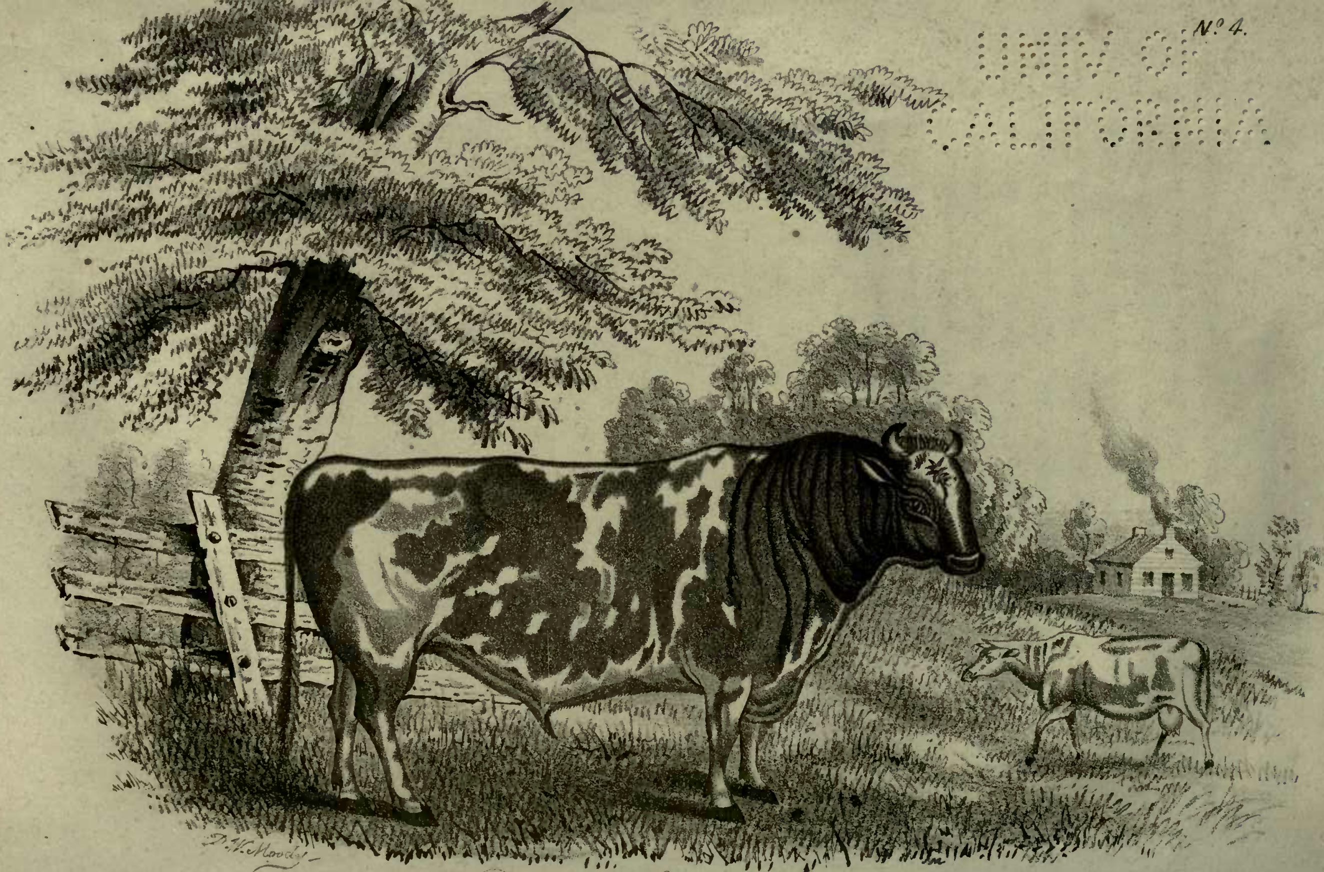
From the accounts of different naturalists, describing the habits and character of the lion, we may conclude that he possesses the most certain and tractable, with the mildest disposition among the Felinæ, and is highly susceptable of recollection and attachment for those who have treated him with kindness; that, in general, he will not attack man, unless attacked, or under the influence of extreme hunger; and that his most favorite prey is various animals among the Ruminantia, and some allied groups. But, notwithstanding all that has been recorded of his majesty, magnanimity, and gratitude, we cannot divest him of a share of that uncertain temper, which is a characteristic feature of the cat.

These are some of the principal outward marks which distinguish what has formerly been considered the varieties, and habits of this formidable creature; but we have yet to notice another animal apparently closely allied, which has long remained known only by the records of antiquity. Among the figures represented on the hieroglyphic monu-

ments of Upper Egypt, a lion is represented without a mane; and it was conjectured, that an animal of this character must have at one time existed, or, more probably, does still exist in some of the more unexplored districts: in confirmation of which, the skin and jaws of a new species of cat, larger than the lion, of a brownish color, and without any mane, have been received by Professor Kretchmon, of Frankfort, in England, within a few years past, and of which we shall, at some future time, give a more particular description, together with the lion of the New World (so called), or American lion,—an animal much inferior in size and strength, and of very different habits.

No. 4.

UNIV. OF CALIFORNIA



CATTLE.

Bos taurus domesticus.

PLATE III.—SHORT HORNED BREED.

The animal which we are now about to describe, and which zoologists have genenerally included in the family of the ruminants, are fully equal to the wool-bearing tribes in value and utility. The several species and various races of oxen, in all countries, are most in the economy of the inhabitants. They are used for labor, and even assist in the wars of their masters. Their flesh affords nourishment for the body, while their skin, hoofs, and horns, are indispensable for the stronger articles of clothing, and in the manufacture of many substances in daily use. In some countries, they are so much esteemed, and their produce of milk, cheese, and butter, so highly valued, that they are never slaughtered—except on the most extraordinary occasions, and never used as an article of common or general food. In other countries, they are only used for the purposes of sacred offerings. In Egypt, the bull was long considered a sacred animal; and in the mythology of the Hindus, the 'Holy Cattle' are cared for, and their molestation punished with the most severe penalties.

In almost all countries where oxen are employed, (and this is over the largest portion of the civilized world,) the varieties of the European domesticated races are almost the only animals which are used—few of the other species having yet been found capable of being domesticated to any extent, or easily reared in confinement. Wherever the breeds may have originally arisen, or from what primitive stock they may have sprung, as yet, remains in doubt:

they have spread far and wide over the European continent; they have reached North and South Africa, where they now exist in innumerable herds. In the latter countries, they form a most important source of wealth, and are tended with the utmost care—their skins regularly dressed, and their horns twisted and variously ornamented. In some sections of this country (North America), they are more numerous than the wild buffalo; and in some parts of the Southern continent, they range in immense droves, almost in a state of unreclaimed nature.

In tracing the origin of these breeds, so extensively spread, and affording a boon of such importance to mankind, there is much difficulty—no records of introduction or of produce existing; and we are driven to a comparison of the parts least subject to variation, with corresponding parts of the wild species with which we are acquainted. In all the British and American collections at this time, we believe there are not materials for such a comparison; but in the works of Cuvier, we shall find this in a great measure supplied; and whatever additional information may be within our reach, shall be added. We shall begin with certainly the most important; and endeavor to trace the stock of our domestic races of cattle, and the forms they are supposed to assume in the various civilized countries. These are placed in the natural systems, as the *Bos taurus* of the older naturalists; the *Bos taurus domesticus* of Linnæus.

By most persons it is thought that the domestic races of our cattle originally sprung from the *Bos bubalus*, the Indian or American buffalo. Some, again, treat of them as arising from the *Aurochs*, or wild cattle of Germany and Poland. These, according to the system of Smith, come into subgenera different from the domestic breeds; and from both these suppositions, the opinion of Cuvier varies, as he is inclined to consider our present cattle identical with a

species no longer existing in a wild state, but which has by the exertions of man, (as in the instance of the camel and dromedary,) been for ages subjected to his power. The remains of this animal have been found in a fossil state; and it is upon the comparison of these remains with the skeleton of the *Auroch*, the buffalo, and our domestic races, that Cuvier has founded his opinion.

The species which we intend more particularly to describe at this time, and which is represented in plate III., is the 'Short-Horned British Breed of Cattle;' so termed in contradistinction to other breeds, where the horns are long and slender. They are principally found in the southern counties of England, where they are, even at this day, very extensively bred; but have been extended, to a certain extent, in almost all directions:—into the United States, Holland, Scotland, and various parts of Europe. They were originally from a Dutch stock, and somtimes bear that appellation. They are a handsome breed, compact, yet elegant, rather smooth skins and thin hides, and have often a pleasing arrangement of blended colors, of red and white and a sort of roan, which sometimes almost appears purple. They feed easily, and grow to a large size; and are prized as being capable of rearing to an extraordinary heavy weight at a very early age. Their average weight is from 1200 to 2000 pounds; and a few examples are recorded of their exceeding even 3500 and 4000 pounds in weight. They are also most extensively used for the dairy, yeilding abundant quantities of milk, though it is supposed by some to be of rather an inferior quality. It is, however, in considerable repute for its produce of butter, as it possesses both a rich color and good flavor.

The *long-horned breed* is deeper in the fore-quarter, and lighter behind; rather inferior to the short-horned in size; of a thick and firm hide; long hair; and remarkable for

their long horns. Lancashire, in England, is the mother-country for this breed. They are, in general, very slow feeders, although they have been somewhat improved of late,—especially a mixed breed, which is reared in some parts of the United States.

The *middle-horned cattle* (so called), are only a variety. They were first reared in England, in the counties of Devonshire, Sussex, and Herefordshire. The first, when in a state of purity, are of a high red color, thin-skinned, and silky, both in appearance and in handling. They feed early; are adapted for draught; and the shoulder points, according to Mr. Culley, are beautifully fitted for the collar. As dairy cattle, they are also esteemed; and from their being steady and active, as well as capable of great exertion in harness, they are peculiarly adapted for the purpose of the team. They are usually worked from three to six years old, before they are fattened: altogether, they have been considered a very valuable breed.

The *Welsh cattle* are small, active, and hardy; black, with thick horns, turned upwards; and have been considered as quick feeders.

The *Alderney breed* is a very pretty and handsome race; finely made, and with slender limbs. They are of a light-reddish, or yellow color; sometimes black; and thrive best in the warmer states; but they require extra care and keeping. They are valued mostly on account of the richness of their milk, which is said to produce large quantities of butter. In many places, a cross between some of our hardy smaller races has been found useful; and they then bear the climate much better.

The *Suffolk duns* are a small breed—formerly reared in that country; but are now scattered over the largest portion of Europe, and some parts of the United States. They are supposed by Mr. Culley to be a variety occasioned by an intercourse with the northern droves. They are a

polled breed, or without horns; the color *dun*, but sometimes varies. They are most highly esteemed for the dairy.

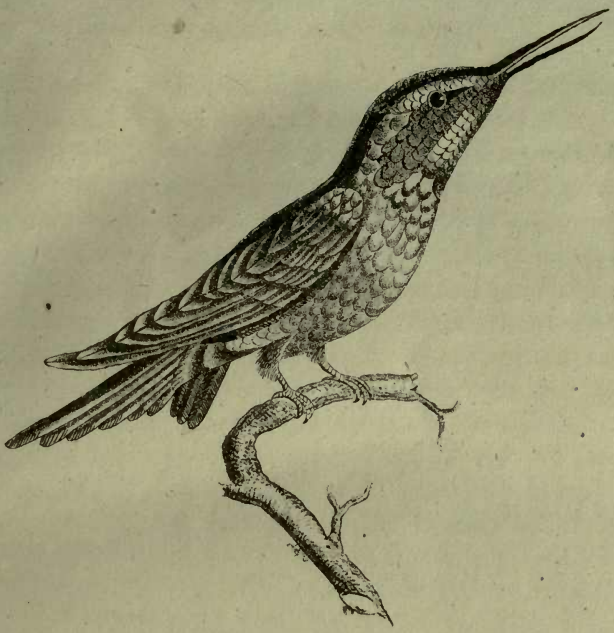
The *Galloway polled breed*, as their name implies, were originally from Galloway, (a rather wild district in the south part of Scotland,) where they are extensively grown, and yeild a high price, from the superior quality of the beef. The most prominent feature in this breed is the want of horns; a peculiarity which is very striking to an individual accustomed to a district where a horned breed is reared. They are remarkably neat, strong, compact animals. The most favorite and common color is black; but red, or dun, brindled, and pied colors, are sometimes met with. The hair is long, close, fine, and silky.

THE HUMMING BIRD.

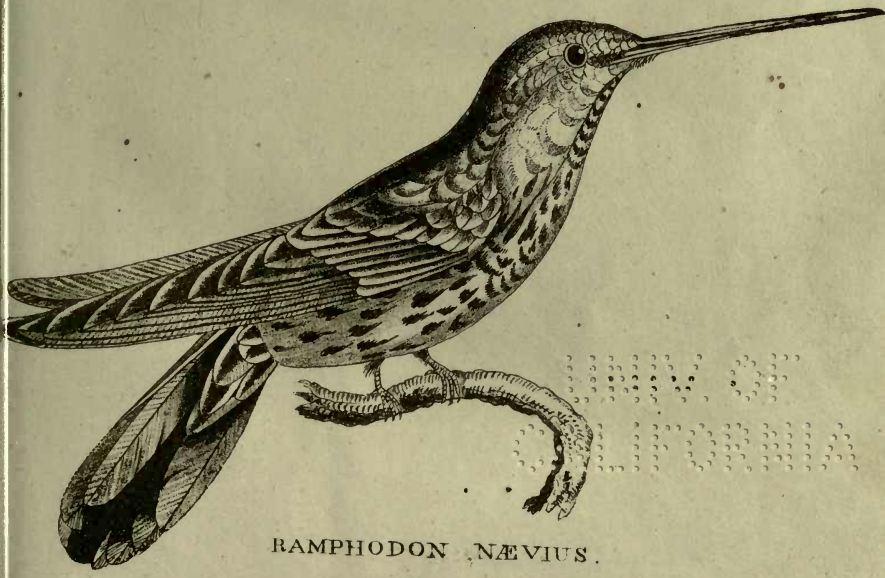
Trochilus Sphanocles. *Trochilus Cornutus.*

PLATE IV., NO. I.—VIOLET-CROWNED HUMMING BIRD. PLATE IV.
NO. II.—DOUBLE-CRESTED HUMMING BIRD.

The geographical distribution of the various races of created beings has of late excited considerable interest; and a mass of facts have been collected, which go far to prove that it is regulated by certain laws, chiefly dependent upon the conjoined influences of climate and temperature. Birds are equally subject to those rules; though, as might be suspected from their more extended locomotive powers, their ranges are wider, and some groups and species are more generally spread over the world, than those beings which require the assistance of a solid medium to transport themselves from place to place. Instances of this may be given in one or two examples. The great families of the falcons, pigeons, and swallows, are universally diffused; parrots are found in every quarter of the globe, except Europe; and woodpeckers are wanting only to New-Holland. The peregrine falcon—so renowned and noble, and highly valued for an ancient but nearly forgotten sport—has its free range over the greater part of Europe, America, and Greenland, and to some extent in the distant parts of New Holland; the short-eared owl is common in Europe, Siberia, and the neighborhood of Canton, in China, and Pennant mentions it as an inhabitant of the Falkland Islands; the common magpie extends over Europe, has been discovered in the Himmalayan range, in India, and even reaches the cold regions of North America; while specimens of the glossy ibis have found their way



TROCHILUS ANNA.



RAMPHODON NÆVIUS.

The Indian could appreciate their loveliness—delighting to adorn his bride with gems and jewelry plucked from the starry frontlets of these beauteous forms. Every epithet which the ingenuity of language could invent, has been employed to depict the richness of their coloring: the lustre of the topaz, of emeralds, and rubies, have been compared with them, and applied in their names. But now let us enquire, whether an exterior of "gorgeous plumary" is all which they possess, and if there is no beautiful adaptation of structure to supply the wants of so frail a tenement.

The humming-birds, or what are known by the genus *Trochilus* of Linnæus, have lately received vast additions to the number of their species; although forming a large and closely-connected group, they exhibit a great variety of forms and characters, which are not easily comprehended in the old two-fold division. They have been, accordingly, divided by modern ornithologists into various sections and genera, which will be detailed in a part of our work especially devoted to their classical arrangement.

We previously mentioned that these birds were nearly confined to the tropical portions of this country; and according to our best information, that great archipelago of islands between Florida and the mouth of the Orinoco, with the mainland of the Southern continent until it passes the Tropic of Capricorn, literally swarms with them. In the wild and uncultivated parts, they inhabit those forests of magnificent timber, overhung with lianas and the superb tribe of bignonaceæ, the huge trunks clothed with a rich drapery of parasites, whose blossoms only give way in beauty to the sparkling tints of their airy tenants; but since the cultivation of various parts of the country, they abound in the gardens and seem to delight in society, becoming familiar and destitute of fear, hovering over one side of a shrub, while the fruit or flowers are plucked from

the opposite. As we recede from the tropics, on either side, the numbers decrease, though some species are found in Mexico, and others in Peru, which do not appear to exist elsewhere.

From various accounts, given by Audubon, Wilson, and Bullock, of the several species existing in the island of Jamaica and in Mexico, and from such information as we have been able to gather from other sources, there appears to exist a great similarity in their manners and habits. They possess "a lively and active disposition, almost constantly on the wing, and performing all their motions with great rapidity; their flight is in darts, and it is at this time, in a brilliant sun, that the variation of their plumage are displayed with the greatest advantage."

During the season in which they rear their young, if disturbed, they become quite ferocious; they dart round with a humming sound, and often pass within a few inches of the disturbers; "and should the young be newly hatched, the female will almost immediately resume her seat, though the intruders continue within a few yards of her." The intrepidity and jealousy of the diminutive Mexican species, according to Mr. Bullock, far exceeds the quiet courage of the Northern birds. "When attending their young, they attack any bird indiscriminately that approaches the nest. Their motions, when under the influence of anger or fear, are very violent, and their flight rapid as an arrow. The eye cannot follow; but the shrill piercing shriek which they utter on the wing, may be heard when the bird is invisible, and has often led to their destruction by preparing one for their approach. They attack the eyes of the larger birds, and their sharp, needle-like bill, is a truly formidable weapon in this kind of warfare. Nothing can exceed their fierceness when one of their species invades their territory during the breeding season: under the influence of jealousy, they become perfect maniacs; their throats swell

—their crests, tails and wings expand—they fight in the air, uttering a shrill noise, till one falls exhausted to the ground."

Their nests are built with great delicacy, about one inch in diameter, and as much in depth. They are generally fixed on the upper side of a horizontal branch, free from twigs; but in some instances have been known to be attached on the side of an old moss-grown trunk; and others where it was fastened on a strong, rank stock, or weed, in the garden.

It is generally acknowledged by our most popular writers, that the humming-birds lay only two eggs, and some species but one. This small fecundity, with the many casualties which are liable to destroy them, the vicissitudes of season, and the assaults of various animals, birds, and even insects, will give the reader some idea in what immense profusion these little birds exist, when two, or at most, four, is the number of young reared in a season. The eggs are not so small in proportion as one would imagine on looking at the bird; they are usually about one-half inch in length, and from one-fourth, to three-eighths of an inch in diameter. In shape, they are nearly a complete oval, and of a pure, delicate white. The South American humming-bird sits twelve days, and the young leave their nest and follow their parent in eighteen days; the North American species, according to Audubon, hatches only ten days, and the young are ready to fly in one week.

The discovery of the violet-crowned humming-bird, is said to be due to M. M. Lesson and Garnet, who met with it during one of their voyages, and caused it to be figured in a splendid volume, devoted to the Natural History of that exhibition.

It inhabits Chili, and was discovered in the woods surrounding the Bay of Conception, near Talcaguano. They

are generally found at mid-day, enjoying the flowers of a scarlet loranthus, which abounded with a honied juice. This species is about four inches in length, and in form, is stronger than many of its congeners, and the shafts of the quills are of more than ordinary strength. The crown is adorned with violet plumes, forming a sort of cowl, and lengthened towards the occiput. The upper parts of the body are of a golden green, which also tinges the wings and tail; the throat is white; the plumage composed of scaly feathers—each marked in the centre with an oval brownish spot; the breast and belly are reddish-white; the tail and wings brown, with violet reflections.

DOUBLE CRESTED HUMMING BIRD.

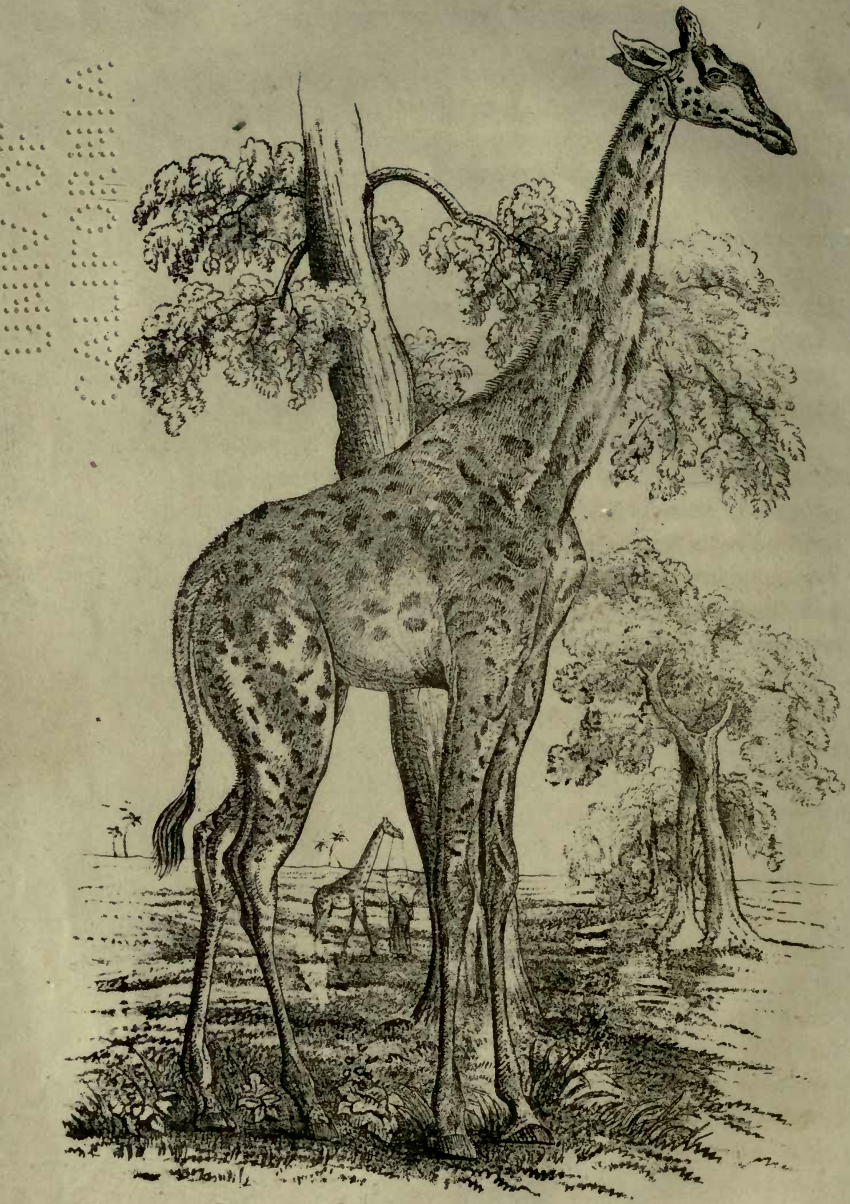
The discovery of this most splendid species is due to the Prince Maximilian de Wied-Neuweied, who described it in his voyage to Brazil. This bird is from three to four inches in length, of which the tail alone measures nearly one-half; the bill and feet remarkably slender, and the former slightly bent, terminating in a very fine point. The most characteristic mark of this species is the two flattened crests, composed of six feathers, which divide in front of the head, on a level with the eyes, and are directed forwards.

The colors of the tufts or horns, certainly baffle description, and the idea can only be conveyed by likening them to some familiar object, such as the bright and changing hues of steel, and other metals, or the sparkling tints of precious stones. The centre of the forehead between the tufts is cornered with scaly feathers, of a brilliant green and blue reflections. A gorget of deep and rich purple composed of lengthened feathers, reaches from behind the eyes upon the breast; the breast and upper part of the belly is of the purest white, and crosses the lower sides of the neck, nearly meeting on the back, and forms a beautiful

contrast to the deep-colored and delicately formed feathers of the gorget. The under part, is of the same green with the upper part; the wings are brown; the tail is strongly wedged-shaped; the two centre feathers brown; the others pure white.

The female wants the splendid crests which adorn the male, but the other parts of her plumage will scarcely yield in brilliancy. The crown is rich ultra-marine blue, and the dark gorget is distinctly marked; the tail is of equal length, and with the nuchal collar and under parts are pure white; the upper part of the head, back and shoulders, are bright golden-green; the wings are purplish black.

In the preceeding pages we have endeavored to give a short description of the distinction and economy of this interesting family, deriving our information from those sources which we judged were most worthy of credence, and always, when possible from observers who had seen the birds in their wild state, and untrammelled by any restraint.



CAMELEOPARD or NORTH AFRICA.

THE CAMELEOPARD OF NORTH AFRICA.

Cameleopardalis antiquorum.

PLATE V.—THE CAMELEOPARD.

Modern zoologists have considered that the northern and southern regions of Africa possessed separate species of this extraordinary animal, and have lately appropriated to that of the north the title of "*C. antiquorum*," as being the animal known to the ancient Greeks and Romans, and to the old Egyptians, as proved by the appearance of the creature on the sculpture of the latter, and by the histories of the former, which we have handed down with apparent authenticity. We are ignorant, however, yet how far the limits of each extend, but know that one or other of them range from the most southern extremity of the Cape to the very north;—not very uncommon in the more unexplored regions, but rapidly decreasing wherever commencing civilization has begun to plant her steps.

The present figure is that of an animal from the north, taken in the vicinity of Senaar and Darfour; and as it is in this organ that the principal specific distinctions appear, it may serve for comparison with those from the southern part of the continent.

In both species. the immense length of neck, and the disproportional height of the fore-quarter, compared with the hinder, are the appearances which first strike an observer as unwieldy, clumsy, and unfitted for an active life. The food, however, is derived in a great measure from the foliage of trees, particularly a species of Acacia (*Acacia Giraffæ*, Burch). It seizes the herbage or foliage with its tongue, which is long and narrow, and which rolls round

the object with a considerable degree of pliability, using it as a prehensile organ, and one beautifully fitted as an accessary to the other parts of its structure. The perfection of its form enables it to reach the exalted branches, which are uncropped, from being above the height of ordinary animals; and, on the other hand, a shorter neck would not have allowed it easily to reach the earth, in districts where wood was more unfrequent. Its pace is an amble, and, when put in motion, it is capable of considerable speed, according to Major Denham, such as to keep a horse at a pretty smart gallop. It occasionally falls a prey to the lion, the only beast of prey which dares to attack it; but the powerful strokes of both the fore and hind feet are sometimes an equal match in open combat. The height of the Giraffe is from fifteen to twenty-one feet. The general color is yellowish-white, patched over with large square and irregularly formed spots, of a yellowish-brown or fawn color, divided from each other by a narrow stripe of the pale brown color, and represented among the antelopes by the appearance of the *Tragelaphus scripta*, and one or two others. The head isadorned with three prolongations of the bone, two of which, in the usual place of horns, are generally described as such. They are covered with a velvety skin similar to those of the deciduous horned deer at their first growth, out which does not fall off, and at the tip they are surmounted by some strong bristly hairs. In the adult, the internal structure is hard and solid; but in the young, Geoffroy St Hilaire observed the appearance of a cellular centre, nourished by vessels. The third protuberance is in the centre of the skull, and appears as a rounded knob, and is of a very spongy texture. The Cameleopard was seen by Denham and Clapperton in parties of five or six on the borders of Lake Tchad, and also met with and described by Ruppel in his Travels in North Africa; while those of the south are

frequently mentioned in the Travels of Le Vaillant and Burchell. The former, who was the first naturalist that had an oportunity of closely examining the giraffe, gives a full and accurate description of it in his Travels.

"The giraffe chews the cud, as all horned animals with cloven feet do. Like them, too, it crops the grass; though seldom, because pasture is scarce in the country which it inhabits. Its ordinary food is the leaf of a sort of mimosa, called by the natives *kaneap*, and by the planters *kamel doorn*. The tree being peculiar to that country, and growing only there, may be the reason why it takes up its abode in it, and why it is not seen in those regions of the south of Africa where the tree does not grow. This, however, is but a vague conjecture, and which the reports of the ancients seem to contradict.

"If I had never killed a giraffe, I should have thought, with many other naturalists, that his hind legs were much shorter than the fore ones. This is a mistake; they bear the same proportion to each other as is usual in quadrupeds. I say the same proportion as is usual, because in this respect there are variations, even in animals of the same species. Every one knows, for instance, that mares are lower before than stallions. What deceives us in the giraffe, and occasions this apparent difference between the legs, is the height of the withers, which may exceed that of the crupper from sixteen to twenty inches, according to the age of the animal; and which, when it is seen at a distance in motion, gives the appearance of much greater length to the fore legs.

"If the giraffe stand still, and you view it in the front, the effect is very different. As the fore part of its body is much larger than the hind part, it completly conceals the latter.

"Its gait when it walks is neither awkward nor unpleasing; but it is ridiculous enough when it trots; for you would

then take it for a limping beast, seeing its head perched at the extremity of a long neck which never bends, swaying backwards and forwards, the neck and head playing in one piece between the shoulders as on an axis. However, as the length of the neck exceeds that of the legs at least four inches, it is evident when the length of the head too, is taken into account, it can feed without difficulty, and of course is not obliged either to kneel down or to straddle with his feet, as some authors have asserted. It is, besides, unnecessary for the animal to kneel, as it feeds principally on the boughs of a species of acacia, which it draws down to its mouth with its long and flexible tongue.

"Its mode of defence, like that of the horse and other solidungolous animals, consists in kicking with the hoofs. But its hind parts are so light, and its jerks so rapid, that the eye cannot follow them. They are even sufficient to defend it against the lion, though they are unable to protect it from the impetuous attack of the tiger.

"Its horns are never employed in fight. I did not perceive it to use them against my dogs; and these weak and useless weapons would seem but an error of nature, if nature could ever commit error, or fail in her designs. In their youth, the male and female giraffe resemble each other in exterior. A knot of long hair then terminates their obtuse horns; this peculiarity the female preserves for some time, but at the age of three years the male loses it. At first the hide is of a light red, but it deepens in color as the animal advances in age, and, at length, it is of a yellow brown in the female, and of a brown bordering on black in the male. The male may, even at a distance, be distinguished from the female by this difference of color. As to the arrangement and form of the spots, the skin varies in both sexes The female does not stand so high as the male, and the frontal prominence is less marked. She has four teats; and according to the account given by the natives, she has

but a single young one at a birth, with which she goes twelve months."

Several have been carried to Europe. One was sent as a present to the King of England by the Pacha of Egypt, and arrived there in 1827. It died recently.

"In one point all the observers of the European giraffe agree—that they never make any noise whatever. Further, they appear to consider that the animal would be useless to man in a state of domestication. M. Acerbi has an anecdote illustrative of this point:—

"'When at Alexandria, I had one day ordered the two giraffes (a male and female) taken at Darfur, to be led up and down the square in front of my house; among the crowd collected on the occasion were some Bedouins of the Desert. On inquiring of one of them whether he had ever seen similar animals before—he replied that he had not; and I then asked him in Arabic, 'Taib di? Do they please you?' To which he rejoined, 'Mustaib,' or, 'I do not like them.' Having desired my interpreter to inquire the grounds of his disapproval, he answered, 'that it did not carry like a horse, it did not serve for field labors like an ox, did not yeild hair like a camel, nor flesh and milk like a goat; and on this account it was not to his liking.'"

This animal, though unknown to the Greeks, is described by Pliny and Oppian, and Julius Cæsar brought one to Europe in the year of Rome 708, after which they were frequently used in the circus or triumphal processions. Its ancient denomination was *zurapha*, from which the modern name of giraffe is derived.

In a state of nature they are timorous, and flee immediately from danger, but in a state of domestication lose a great part of their timidity, become mild and docile, know their keeper, and take from the hand what is offered to them.

THE GNU.

Catoblepas Gnu.

PLATE VI.—THE GNU.

The gnu is one of the swiftest beasts that ranges the plains of Africa. Mr. Barrows says, "The various descriptions that have been given of it, all differing from each other, should seem to have been taken from report rather than from nature, notwithstanding that one of them was for some time in the managerie of the Prince of Orange, at Hague. Nature, though regular and systematic in all her works, often puzzles and perplexes human systems, of which this animal affords an instance. In the shape of its body it evidently partakes of the horse, the ox, the stag, and the antelope."

They inhabit the plains of Central and Southern Africa, abounding on the arid deserts in company with herds of the zebra and guagga, and flocks of ostriches, and beyond the bounds of civilization, where some species have not been nearly extirpated, are almost always found in company.

"Its head is about eighteen inches long, the upper part completely guarded by the rugged roots of the horns, that spread across the forehead, leaving only a narrow channel between them, that wears out with age, as in the instance of the buffalo; the horns project forward twelve inches, then turn in a short curve, backwards, ten inches: the space from the root to the point is only nine inches. Down the middle of the face grows a sort of black hair four inches in length; and from the under lip to the throat another ridge somewhat longer. The orbit of the eye is round, and surrounded by long white hairs, that, like so many radii,

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diverge and form a kind of star; this radiated eye gives to the animal a fierce and uncommon look. The same sort of vibrissæ is thinly dispersed over the lips. The neck is little more than a foot long; on the upper part is a mane extending beyond the shoulders, erect, and five inches in length; the hair like bristles black in the middle, and white on each side. This mane appears as if it had been cut and trimmed with nice attention. A ridge of black hair, from six inches to a foot in length, extends from the fore part of the chest, under the fore legs, to the beginning of the obdomen. The body is about three feet two inches long. The joints of the hip bones project high, and form on the haunches a pair of hemispheres. The tail is two feet long, flat near the root, where the hair grows only at the sides; this is white, bristly, and bushy. The entire length, from the point of the nose to the end of the tail, is seven feet ten inches; the height three feet six inches. The color is that of a mouse, with a few ferruginous straggling hairs on the sides. Like the mare it has only two teats; and all its motions and habits are equine. Though a small animal, it appears of considerable size when prancing over the plains. The gnu might be considered as an emblem of unbounded freedom, with the means of supporting it. It possesses, in an eminent degree, strength, swiftness, weapons of defence, acute scent, and a quick sight. When they happen to be disturbed, the whole herd begin to draw together, and to butt each other with their horns, to bound, and play their various gambols, after which they gallop off to a distance. Their motions are extremely free, varied, and always elegant. Fierce and vicious as this animal certainly is in its wild state, yet it probably might not be very difficult of domestication. No successful attemps, however, have yet been made to tame it. The flesh is so like that of an ox, both in appearance and taste, that it is not to be distinguished from it."

There is another variety of the gnu, a male and female of which was exhibited at Cross's menagerie, in Pall-Mall East; and in their appearance, partook more of the antelope tribe than the preceding. Mr. Pringle, who had seen this variety in its native regions, observes, "that the gnu forms a graceful link between the buffalo and the antelope; possessing the distinct features which, according to naturalists, are peculiar to the latter tribe. The gnu exhibits at the same time, in his general aspect, figure, motions, and even the texture and taste of his flesh, qualities which partake very strongly of the bovine character. Among other peculiarities, I observed, that, like the buffalo or the ox, he is strangely affected by the sight of scarlet; and it was one of our amusements, when approaching these animals, to hoist a red handkerchief on a pole and to observe them caper about, lashing their flanks with their long tails, and tearing up the ground with their hoofs, as if they were violently excited, and ready to rush down upon us; and then, all at once, when we were about to fire upon them, to see them bound away, and again go prancing round at a safer distance. When wounded, they are reported to be sometimes rather dangerous to the huntsman; but though we shot several at different times, I never witnessed any instance of this. On one occasion, a young one, apparently only a week or two old, whose mother had been shot, followed the huntsmen home, and I attempted to rear it on cow's milk. In a few days it appeared quite as tame as a common calf, and seemed to be thriving; but afterwards from some unknown cause, it sickened and died. I heard, however, of more than one instance in that part of the colony, where the gnu, thus caught young, has been reared with domestic cattle, and had become so tame as to go regularly out to pasture with the herds, without exhibiting any inclination to resume their natural freedom."

EUROPEAN IBEX.

THE GOAT.

Genus Capra.

PLATE VII.—NO. I., THE EUROPEAN IBEX. NO. II., THE BEARDED ARGALI.

A GENUS of ruminant mamalia, agreeing with the rest of the order in their general structure, but differing in so many particulars, and corresponding so well with each other in the majority of these, as to form a very distinct, as well as a highly interesting family. Of all animals which are reared in a state of domestication, goats are the most picturesque in their appearance, the most lively in their manners, and the most hardy in their constitutions. Of all four-footed animals which have hard hoofs, they are the surest footed; and this agrees with their native localities. They are the inhabitants of the rocks, the tenants of the mountain-top, and the precipice, browsing on that vegetation which is inaccessible to any other race of ruminant mamalia. In this respect some of the antelopes approach nearly to them, as for instance the chamois, or rock antelope of the Alps; but fleet as that animal is, and great as is its power of endurance, it is by no means equal to the mountain goats. It is probably on account of the vigorous constitution of those animals, and their consequent power of enduring the utmost severity of the elements, that the ancients chose *Capricorn*, or the goat, to represent that sign of the zodiac which the sun occupies during the greatest depth and utmost severity of the northern winter.

Goats, in one or other of the species, are found in almost every region of the world; and they are very obedient to climate in many of their appearances; but wherever they are found, they are a lively, brave, and healthy race. Their

skins are remarkable for the firmness of their texture, and the strength with which the hair adheres to them. Generally that hair is long and shaggy, but fine in its gloss, and remarkable for preserving that gloss for a long time after the death of the animal. In some peculiar climates this hair is longer and of finer staple, as in the goat of Angola, which country by the way is remarkable for the length and beauty of the hair in some other of its mammalia. In some other countries again, as for instance on the northern slopes of the Himalaya mountains, there are goats which are furnished with two sorts of hair, one which is rough and bristly, calculated for thowing off the heavy snows which fall upon their upland pastures during the winter; and another which is shorter, of finer staple, and superior perhaps to the covering of any animal for the purposes of domestic economy. The animals which are thus provided are the Cashmere goats, or rather the goats which furnish the materials of the splendid shawls known by the name of Cashmere; for the goats themselves are rarely met with on the south side of the summits, and will not live in the valleys or plains of the lower and warmer parts of India. The wool of these goats, which forms as it were, their inner clothing, is not near so fine in the staple as the wool of many of the sheep; but there is a durability, and also a facility of fixing permanent dyes upon it, both of which render it of great value in an economical point of view. And it may be said with truth that there is no tissue woven of any sort of material which lasts so long, preserves its color so well, or so difficult to be soiled, as a genuine shawl made of the hair of the cashmere goat. On this account these articles are esteemed the most valuable productions of the oriental loom; and as such they are favourite presents among persons of distinction in that country, the abode of fashion, pomp and luxury: and though in point of beauty and design, and fineness of texture, many

productions of the looms of Europe are superior, yet in durability the very best of them fall short of the genuine productions of India, if made of the unmixed covering of the shawl goat of Himalaya.

Goats in all the varieties of their species, are understood to be remarkably healthy and wholsome animals. Among their native rocks they browse upon vegetables much to hard for almost any other of the ruminating animals; and it is understood that scarcely any plant, be it what it may, is deleterious to a goat' It is also said, that they are not only proof against the poison of reptiles, but that they feed with impunity upon those possessing the most deadly venom. This last is not very clearly made out, though it is by no means unlikely; because there are proverbs respecting it in some languages. Thus for instance, in the highlands of Scotland, there is an old proverbial expression for gratuitous malignity, which states that is "like a goat eating the serpent."

As goats are more vigorous in their motions, and probably more energetic in their character than any other ruminant animals, the flesh of the full grown ones, especially the males, is more tough, and it has a peculiar flavor which many persons do not relish. Its color is remarkable for depth, indicating that there is more blood in a goat than in almost any other animal; and it is remarkable as a physiological fact, that this general distribution of blood, and consequent redness of appearance in the muscles of animals, is always in proportion to the degree of energy with which these muscles are exerted, or capable of being exerted. When prepared as hams the flesh of male goats, though exceedingly hard and peculiar in its flavor, is much relished by some persons; and to any one who wishes to 'make a day' in climbing the rocks in a goat's country, there are few pocket companions more worthy of being recommended than some slices near the knuckle-end of a goat's ham At

first, indeed, they look more like slices of flint stones, or rather like mountain jasper, than of anything else, and they require some vigor in mastication. But, notwithstanding this, and their unpallatable saltness and peculiar flavor, it is astonishing how those slices of goat's ham stimulate the salivatory glands, moisten the parched throat, and allay thirst when one is breasting a steep mountain under the ardor of a mid-day sun.

The flesh of female goats when in proper condition is tolerably good; that of a young kid forms a delicious and withal a savory stew; and when goats are kept for the purposes of domestic economy, and the males are multiplied as is done with oxen and sheep, they get very fat, and their flesh is described as being excellent. The milk of goats is rendered superior in many respects to that of any other animal. It contains less oil, and on this account it sits lighter upon the stomach. Hence consumptive people are not unfrequently recommended to go to the goat-feeding districts, as a dernier ressort against that most direful of human maladies. With them, however, it is the whey after cheese or curds have been made, and not the entire milk, which is recommended; and even then it is probable that the fine air of the goat-country exerts as salutary an influence as the supposed medicine; but whether this be or be not the case, is not much worthy of inquiry; because, if valuable life can be saved (and as consumption is a disease of the young, the life of consumptive patients is always valuable), any circumstance that may bring them to the pure air of those cliffy regions, which goats inhabit, is always worthy of being cherished.

It is a fact worthy of notice, that the remains of the goat and also those of the sheep, have not been found in any of the accumulations of fossil animals; though, with the exception of Australia, which is very peculiar in its zoology, goats are found native in all the more extensive countries

of the world. In all regions they inhabit the most wild and inaccessible places; and yet they seem to have a stronger attachment to the human race than almost any other animals: they are playful and familiar; and it is highly probable that the goat was among the first animals that man employed in a domestic state. An instance of this is mentioned by a very accurate naturalist, relative to the wild goat of the Alps: he and his party landed on a wild and romantic spot on the bank of the lake of Thun, where those animals are numerous, and left comparatively in a state of nature; but he and his companions had no sooner landed than these wild goats came bleating around them, with their kids, and even entered the boat, and resisted being driven from it. They did this too evidently from mere attachment to the travellers, because the pasture was rich, and the travellers had nothing in the shape of food wherewithal to tempt them.

The introduction of the goat and the ram into the zodiac by the very earliest astronomers, shows that the people who first cultivated the science of the heavens were familiar with these animals; and, indeed, there is reason to suppose that the human race, from very nearly the dawn of their history, domesticated and found advantages in those animals. The account given of the deluge in the book of Genesis, is too scanty for supplying any adequate materials for natural history; but it is recorded that the ark rested on the tops of the mountains. We have also evidence in Britain, and almost in every country, that the mountain tops were the habitations of men before they took possession of the plains; and that in those early times the plains were covered with thick forests, inundated with water, or so full of bogs and quagmires, as not to be fit for human abodes. In many places, both of England and of Scotland, we have evidence of early inhabiting and cultivation upon heights which are now bleak and wasted; and even the

roads and stations of the Romans, though they must be referred to a comparatively recent period of history, are usually found upon the high grounds. In this country when it was first discovered by Europeans, the most civilized races of the natives were found upon the mountains; and generally speaking, when we look at the whole earth, we find that, with the exception of the lines of the shores, and the banks of the larger rivers, the people inhabited the mountains, while the low grounds were abandoned to tangled forests and wild animals,

This circumstance naturally connects itself with the goat and the sheep as mountaineers, and renders it probable that both of these were domesticated at an earlier period than the ox, which, inhabiting lower down, may not have been brought under the dominion of man until the pastoral life had been partially changed for the agricultural. Accordingly we find that these animals make an important figure in the mythologies of many ancient nations. Pan, which is a symbolical personification of the productive energies of nature, was furnished with the attributes of a goat; in like manner the Lybian Jupiter was furnished with the horns of a ram. The Ægis, which was equally the breast-plate or shield of Jupiter and of Minerva, was originally nothing but a goat's skin; and by the fable of those two divinities, the goat was thus connected with the supreme power and supreme wisdom, which shows the estimation in which the character of the animal was held. Under the Jewish rituals the goat was an important animal, and used as the appropriate symbol of atonement in the splendid rites ordained by the Supreme Lawgiver himself.

The skin of the goat appears to have been early used as an article of clothing; and the first cloth, or rather felt, which was made by the northern nations, appears to have been chiefly formed of the hair of this animal, mixed with shorter fur matted together, and stiffened with the gum of

trees, so as to be proof not only against the weather, but in a great measure against the weapons of their enemies. This species of garment is very frequently alluded to by the ancient poets and historians.

The war tunics of Cimbri, which, in their wars with Marius, are represented as being such strong defences, were of this material; and the Roman auxiliaries had winter dresses of the same, in Britain, and all the other colder provinces of the empire. Even when weaving from spun thread took the place of the more ancient matting, it is highly probable that the long hair of the goat was used in preference to the shorter wool of the sheep. We have further evidence of the early domestication of the goat, in the fact that all Celtic tribes, which are justly regarded as the most ancient races of many parts of Europe, bred and cultivated goats long before the introduction of sheep. In the Highlands of Scotland and in Wales, the goat was the original domestic animal; and in both countries there are many districts called by the name of *Gower*, which is Celtic for goat, and many families have the same surname, whereas no name of the sheep is used except in cases where the use of it is comparatively modern. All these circumstances render the history of the goat a highly interesting one; but it is long, and the details are hardly fitted for a work like the present, though a volume of great interest might be written on the domestic history of the goat.

Goats as a genus are distinguished from antelopes by the bony nucleus, or core of the horns, being, in part at least, cellular, and the cells communicating with the frontal sinuses of the cranium. The horns are more or less angular, or ridged, with transverse knots and wrinkles. Their usual position is upwards and backwards; they are found on both sexes; but on the female they are much smaller in size, and more smooth in their surfaces than in the males.

The line of the forehead is a little convex; the eye is very lively and expressive; the iris being generally brown or yellowish, and the pupil large and oblong, as in other grazing animals. There are no sinuses or openings under the orbits of the eyes, as there are in most of the deer and antelopes, neither is there any muzzle, the naked part being confined to a small space between the nostrils: the ears are narrow and rather rounded at the tips; the tail is short, usually naked on the under side, and frequently carried erect. In almost all the species the males have a long beard; and even in such as have the body covered with comparatively short hair, that on the throat and dewlap is long. The hair of goats is not coarse, but it is very strong, smooth, and straight in the staple; and in almost all the species there is a fine woolly down among the roots of the longer hair. This down, where it is in considerable quantity, is of great value in the arts; and indeed the whole covering of the goat is remarkable for its durability. The legs of goats are much stouter in proportion than those of the antelope. They are furnished with a callous appendage at the joint, and the hoofs are high and solid. The females have two mammæ forming an udder in the groin; they go five months with young; the female is capable of propagating at seven months old; and the birth usually consists of two kids, which are perhaps the most sportive of all young animals. The male does not come to perfect maturity until the expiration of a year; and then a single male is sufficient for a flock of a hundred females. At five or six the male is reckoned old; but the full life of the goat may be estimated at about fifteen years. At all times, but more especially during the rutting season, he-goats emit a peculiar smell, to which the name of *hircine* has been given, from the word *hircus*, a he-goat. In the rutting season the males follow the habit of all gregarious animals, in battling keenly with each other for the possession of the females;

and though their mode of conducting those battles of gallantry is very different from that either of bulls or of rams, it is still very characteristic as well as picturesque.

The European Ibex seems at the present time to be one of those animals which, though the native of a country where natural history is universally studied, has nearly escaped the detailed notice of zoologists, who have been more attentive to the productions of other countries, until the eagerness and perseverence of the Chamoise and Ibex hunters have nearly extirpated the animal, and now rendered it a species earnestly sought after by collectors.

The Ibex is now known to inhabit, sparingly, the Pyrenees, the Alps of Switzerland, the Tyrol, and some of the Spanish mountains. It loves to frequent the most exalted ranges, near the limits of perpetual snow, and seems in its common localities to ascend even higher than the chamois, which in other parts of its habits it closely resembles, being extremely watchful, and difficult of approach on account of the delicacy of its senses of hearing and smell. It is an animal standing from two feet six to two feet ten inches in height. The color of its hair, like that of many of the deer, seems also to undergo a change with the seasons, being in summer of a reddish-brown, during winter of a greyish-brown, the inner parts of the legs and the belly being always whitish. A young animal figured by Fred. Cuvier is entirely of a greyish-brown, very dark above. The horns in this species are often very large; they rise from the crest of the skull and bend gradually backwards, are flat and have the anterior surface ringed, with very strong cross rugged bands. These ridges are thought to become greater in number with age, but Major Smith is of opinion that a regular increase is not always to be depended on.

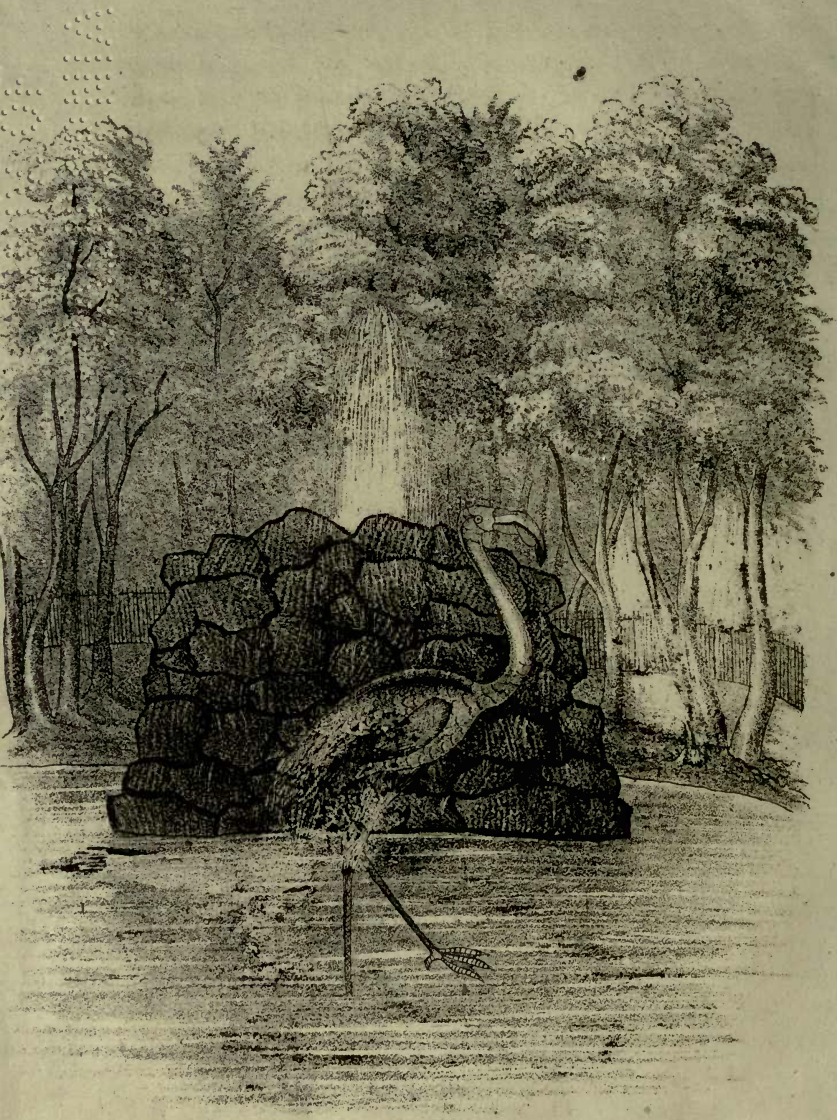
The Ibex was hunted for its flesh and skin, chiefly for the latter, and the chase was reckoned more arduous than

even that of the chamois, for, independent of the difficulty and danger of the pursuit, the animals, when driven to extremity, would turn on their pursuers, and, if unable to pass, would attempt to butt with their powerful horns, and sometimes succeed in driving their adversary over tremendous precipices. In confinement it has been very seldom kept, so that little opportunity of observing its disposition has been afforded. The specimen above alluded to as kept in the Parisian Menagerie, was quiet and dull, and did not exhibit that appearance of gaiety and frolicking so conspicuous in the young of both the goats and sheep. It was brought up by a she-goat, and though still remaining in company, appeared to exhibit no sign of attachment towards its foster mother.

The Bearded Argali.—There is an uncertainty in the history of this animal. The old writers to whom we have referred in the synonyms, on the authority of Major Smith, states it to be a very large animal, of a dark color, maned, and with lengthened hairs on the dewlap. We have copied the figure, and it is described in the following terms:

"Under the general name of Mouflon, are included all kinds of wild sheep; and the term is likewise used with a more restricted application, to indicate particular species. This animal, which is a fifth part larger than the European species, has the tail about seven inches long, terminating in a pencil of hairs, and the horns appear small in proportion to the size of the body.

"In some descriptions it is described as being very beautiful, and bears the the name of African Mouflon; but it is not yet certainly determined whether it ought to be referred to the bearded goats of Pennant, the description given by that author being too incomplete to enable us to speak decisively about its specific identity."



FLAMINGO.

THE FLAMINGO.

Phœnicopterus.

PLATE VIII —THE FLAMINGO.

THE drawing representing the description here given of this extraordinary species of the feathered tribe, was taken from nature by an artist expressly employed for this work. The plate represents the Bowling Green Fountain and Park, at the foot of Broadway, New York, and within the enclosure are to be seen two beautiful specimens of this rare bird. The following is copied from one of our daily papers.

"We notice two of those extraordinary individuals of the feathered tribe, the Flamingo, in these grounds. They are a very rare curiosity, and few persons in these parts, have ever seen them except in print.

"Those at the Bowling Green are about three feet high, to the back, and the neck two feet more. They appear to be in very good health, and are very busily engaged in a continual search for food, (what, could not easily be ascertained,) at the bottom of the basin, stepping about with their heads under water, which to them is about knee deep. They raise their heads only now and then, probably to breath. Their legs are remarkably slender, and bare of feathers up to their bodies. The novelty of the sight attracts many spectators, and so rare a bird is indeed worthy of attention."

A very peculiar genus of birds, forming one of the groups which Cuvier has brought together, as detached from his regular division of *Echassiers*, or stilt birds, and which indeed differ so much from all other birds in some particulars, that they form a very small but very peculiar group,

which can neither be classed with any of the rest, nor described by any common character. Cuvier himself describes the flamingo as "one of the most extraordinary and most isolated of all birds. The legs, of an excessive length, have the three front toes palmated to the end, and the hind one extemely short. The neck not less long nor less slender than the legs, and the small head supports a bill, whose lower mandible is an oval, bent longitudinally into a semi-cylinderical canal, while the upper one, oblong and flat, is bent crosswise in its centre to join the other exactly. The membranous foss of the nostrils occupies almost the entire side of the part which is behind the transverse bend, and the nostrils themselves are a longitudinal cleft of the lower part of the foss. The edges of the two mandibles are furnished with small and very fine transverse lâminæ, which, joined to the fleshy thickness of the tongue, gives to these birds some analogy with the ducks. The flamingos might even be placed among the palmipedas, but for the length of the tarsi and the nakedness of the legs. They live on shell fish, insects, and fishes' eggs, which they get by means of their long neck, and by turning their head round to employ with advantage the crook of their upper bill. They build in the marshes a nest of raised earth, on which they rest astride to watch their eggs, as their long necks hinder them from adopting any other position."

The generic characters are: the bill thick, strong, higher than broad, toothed, conical towards the the point, naked at the base, upper mandible abruptably inflected, and bent down on the under at the lip; the under broader than the upper; the nostrils longitudinally placed in the middle of the bill, and covered by a membrane; legs very long, with three toes before, and a very short one articulated high on the tarsus behind, the fore toes connected by a web which reaches to the claws; wings middle-sized.

The principal species of this singular genus, the Red

Flamingo (*Phœnicopterus ruber*,) of which tne general color is red, and the quills of the wings deep black, or if there be two, as is stated by some ornithologists, they appear to be but little different, except in size. The bird when full grown is not so big as a goose in the body, but it has the neck and legs longer in proportion to its general size and weight, than those of any other bird. The length from the tip of the bill to the extremity of the tail is about four feet, or only three or four inches more; but when the legs are stretched out, the length from the bill to their extremity exceeds six feet. The neck is slender, and of an immoderate length; the tongue, which is large and fleshy, fills the cavity of the bill, has a sharp cartilaginous tip, is furnished with twelve or more hooked papillæ on each side, which bend backwards, and has a ball of fat at the root, which epicures reckon a great delicacy. The bird, when in full plumage, which it does not attain till its fourth year, has the head, neck, tail and under parts of a beautiful rose red, the wings of a vivid or scarlet red, the back and scapulars rose red, and the legs rosaceous. The young, before moulting, have their plumage cinereous, and a considerable portion of black on the secondaries of the wings and tail; at the expiration of the first year, they are of a dirty white, with the secondaries of the wings of a blackish brown, edged with white; the wing-coverts at their origin white, faintly shaded with rose color, but terminated with black, and the white feathers of the tail irregularly spotted with bluish brown. At two years of age the pink on the wings acquires more intensity. In all places of the world where flamingos are met with, they are highly interesting and characteristic birds, their great extent, their singular shape, their brilliant colors, and the sunny skies under which the generality of them sport over the broad waters, are all calculated deeply to interest, and widely to gratify the observer of nature. They are, generally speaking, birds of warm climates and rich places; but they are not wholly confined to the regions

within the tropics. They are met with in the warmer parts of the continent, but they do not appear in any case to range more polarly than about the fortieth degree of latitude, They are common on the African coast, and the islands adjacent to the Cape of Good hope, and sometimes on the shores of Spain, Italy, Cicily, Sardinia. and even to Marseilles, and some way up the Rhone, but rarely in the interior of the continent of Europe, and seldom on the banks of the Rhine. We trace them on the Persian side of the Caspian Sea, and thence along the western coast as far as the Wolga. They breed abundantly in the Cape de Verde islands, particularly that of Sal, constructing on the sea shore, but so as not to be flooded by the tide, a nest of mud, in the shape of a pyramidal hillock, with a cavity at the top, in which the female generally lays two white eggs, of the size of those of a goose, but more elongated. The structure is of a sufficient height to admit of the bird's sitting on it conveiently, or rather standing astride, as the legs are placed, one on each side, at full length. The female will also sometimes deposit her eggs on the low projection of a rock, if otherwise adapted to her attitude during incubation. The young are not able to fly till they are grown; but they can previously run with great swiftness. In this immature state they are sometimes caught, and easily tamed, becoming familiar in five or six days, eating from the hand, and drinking freely of sea water. But they are reared with difficulty, being very apt to pine from want of their natural subsistence, which chiefly consists of small fishes, and their spawn, testacea, and equatic insects. These they capture by plunging the bill and part of the head into the water, and, from time to time, trampling upon the bottom to disturb the mud, and raise up their prey. In feeding they twist the neck in such a manner, that the upper part of the bill is applied to the ground. They generally shun cultivated and inhabited tracts of country, and resort to solitary

shores, salt lakes, and marshes. Except in the pairing season, they are generally met with in large flocks, and at a distance, appear like a regiment of soldiers, being often arranged in file, or alongside of one another, on the borders of rivers. When the Europeans first visited America, they found these birds on the swampy shores quite tame, gentle, and little distrustful of mankind; and we learn from Catesby, that when the fowler had killed one, the rest of the flock, instead of attempting to fly, only regarded the fall of their companion in a sort of fixed astonishment, so that the whole flock were sometimes killed in detail, without one of them attempting to make its escape. They are now, however, extremely shy, and one of them acts as a sentinal when the rest are feeding; and the moment it perceives the least danger, it utters a loud scream, like the sound of a trumpet, and instantly all are on the wing, and fill the air with their clamor. Flamingos when at rest, stand on one leg, having the other drawn up to the body, and the head placed under the wing. When flying in bands, they form an angle like geese, and in walking they often rest the flat part of the bill on the ground, as a point of support. These beautiful birds were held in high estimation by the ancient Romans, who often used them in their grand sacrifices, and sumptuous entertainments. Their emperors considered them as the highest luxury; and we have an account of one of them, who procured fifteen hundred flamingos' tongues to be served up in a single dish. Pliny, Martial, and other writers, celebrate the tongue as the most delicate of eatables. The flesh is not despised, even in modern times; but is alleged by some of those who have partaken of it that it has an oily and somewhat muddy flavor. That of the young is generally prefered to that of the adult bird. The aeriel arrival, and general movement of these birds, about the month of March, are described as being particularly splendid. From the high bastion which forms the

promenade at the city of Cagliari, they are seen moving like lines of fire along the heavens. Those lines sometimes move on in regular order and with uniform flight; at other times the line halts, or performs a slow wheeling circular or spiral course, until they have arrived at the point where they are to rest. Nor does the beauty of the spectacle cease after the birds have alighted on the ground; for they march and wheel and perform various operations there with nearly the same regularity as soldiers go through their evolutions at a well conducted review. Indeed from their great and almost equal powers on the wing and on foot, these birds are equally interesting in the air and on the earth.

THE FIELD SPARROW

Is the smallest of our sparrows, and frequents dry fields covered with long grass, builds a small nest on the ground at the foot of a bush, and lines it with horse-hair. It has no song, but a kind of cherruping, not much different from that of a cricket. There are multitudes of these little birds in North and South Carolina and Georgia. When disturbed, they take to the bushes, clustering so close together that a dozen may be shot at a time. This bird is five inches and a quarter in length; the upper parts are chesnut and black.

TIGER.

THE TIGER.

In the class of carnivorous animals, the lion is the foremost. Immediately after him, follows the tiger; which, while he possesses all the bad qualities of the former, seems to be a stranger to his good ones. To pride, courage, and strength, the lion adds greatness, and sometimes, perhaps, clemency; while the tiger, without provocation, is fierce; without necessity, is cruel. Thus it is throughout all the classes of nature, in which the superiority of rank proceeds from the superiority of strength. The first class, sole masters of all, are less tyranical than the inferior classes, which, denied so full an exertion of authority, abuse the powers entrusted to them.

More, therefore, than even the lion, the tiger is an object of terror. He is the scourge of every country which he inhabits. Of the appearance of man, and all his hostile weapons, he is fearless; wild animals, as well as tame ones, fall sacrifices before him; the young elephant and rhinoceros he frequently attacks; and sometimes, with an increased audacity, he braves the lion himself.

In describing this formidable animal, Cuvier, one of the most celebrated naturalists, places him as second to the lion in strength, and excelling him in activity. "In many

places he is the scourge of the country, and neither man nor beast can with safety inhabit the districts which he has selected for his own. His general form and appearance is so well known, that a very short description will suffice, assisted by the accompanying illustration—wherein he is represented in a low and crouching attitude in order to gain the distance at which he shall take a spring; and this is perhaps the best for displaying both the likeness and the symmetry of the animal. He possesses no trace of the shaggy mane which adds so much to the bold and majestic-looking front of the lion; and his countenance, scowling under different passions, conveys a greater idea of treachery and wanton cruelty, than really belongs to the animal. In shape, he is more lengthened and slender than the lion, the head rounder, and the whole form more cat-like; and all his motions are performed with the greatest grace and apparent ease. The hair is thick, fine, and shining; the color a bright, tawney yellow, fading into pure white on the under parts, and being beautifully marked with dark bands and brindled spots, exhibiting a distribution of color altogether beautiful and pleasing. These marks vary in number and intensity of shade in the females; and the very young animals are of a pale grey color, with obscure dusky transverse bands. A pale whitish-colored variety of the tiger is sometimes met with where the stripes are very opaque, and only seen in particular lights."

Griffith has given a beautiful representation of this variety from a specimen in Exeter Change: "The tiger is exclusively confined to the Asiatic continent; and though its range from north to south is very extensive, that in the opposite directions is rather circumscribed. It is found in the desert countries which separate China from Siberia, and as far as the banks of the Obi, and in the greater number of the larger East India islands, such as Java and Sumatra. The peninsula of Malacca is also said to abound

with them; but the great nursing places of the tiger, their cradle, as Temminck terms it, is the peninsula of Hindostan; the vast jungles of this rich country lining the courses of her majestic rivers, harbors thousands of these animals, for water is always as indispensable for their nourishment as food. The larger islands are therefore also favorite resorts; and many lives have been sacrificed in attempting to free this district from these powerful pests. Cozimbar and Saugur islands are well known in the annals of tiger destruction, and many have been the fatal encounters on their luxuriant shores.

The tiger was much less familiarly known to the ancients, than either the lion or the spotted African cats. Among the Greeks it was scarcely known, Aristotle merely mentioning it as an animal he had heard of. Pliny tells us that the first tiger known among the Romans, was a tame one belonging to Augustus. Claudius, however, afterwards exhibited four at a time, and it has been conjectured that the beautiful Mosaic picture of four tigers, discovered some years ago in Rome, near the arch of Gallicius, was executed at that period in commemoration of so striking and unprecedented a display.

The tiger, in a country where he can be well supplied with food, is a nocturnal animal, lying during the day in some thick cover defended from the scorching heat, and gorged with his last meal in sleepy indolence. In such uncultivated districts he watches at dawn and evening by the side of some track, where the various animals pass, or about the edges of the jungle, and above all at the springs and drinking-places of the rivers, which, in the impenetrable thickets, have but one common access to friend or foe. Hither animals both weak and powerful crowd, forced by the scorching heats to seek coolness and drink; and here the tiger is seldom baffled of his prey.

Where civilization has commenced, the tiger has learned

to prowl around the villages, and attack the cattle, to seize indiscriminately whatever comes in his way. Travelling parties are followed, and a luckless straggler seldom escapes; the baggage-trains, consisting of troops of oxen and buffalos trained to the yoke, are closely watched, and though attended during the day with drums and noisy instruments, and during the night with torches, a journey is seldom performed without some accident or attack.

Various methods were formerly employed by the natives to destroy this animal, most of which could only be partially successful. One of the most approved methods, and one that is practiced to a considerable extent in Russia, is mentioned in the Oriental Field Sports.

This device consists of a large spherical cage, made of strong bamboos, or other efficient materials, woven together, but leaving intervals throughout of about three or four inches broad. Under this cover, which is fastened to the ground by means of pickets, in some place where tigers abound, a man provided with two or three short strong spears, takes his post at night, being accompanied by a dog, which gives the alarm, or by a goat, which, by its agitation, answers the same purpose, the adventurer wraps himself up in his quilt, and very composedly goes to sleep, in full confidence of his safety. When a tiger comes, and, perhaps after smelling all around, begins to rear against the cage, the man stabs him with one of his spears through the openings of the wicker-work, and rarely fails of destroying the tiger, which is ordinarily found dead at no great distance in the morning."

Another very curious mode of hunting the tiger is said to be practiced among the Chinese at this day; and corresponding with the sculptured representations of the ancients. It is taking them in a box-trap, to which the animal is attracted by a looking-glass, placed in the inside, and when attacking its own image, it disengages the fastening of the

lid of the box. This very subject is represented by Montfaucon, as carved upon one of the sides of the tomb of the Nasus, and I believe the ancient origin of it is also confirmed by Claudian.

Since India became so much the country of Europeans, the race of tigers has been much thinned, and ere long it is probable they will be driven to the most remote and impenetrable districts. Hunting the tiger is a sport exclusively Indian; and it suits well to the ardor and spirit of British sportsmen: it is looked upon as far pre-eminent over the other sports of India, as that of the fox in Britain is held superior to a chase with rabbit beagles. It is pursued with great parade and show, a large retinue of followers, and almost royal splendor; and in addition, it possesses the excitement of being attended with considerable danger.

The only animal found suitable to assist in the capture of this formidable beast, is the elephant, which often displays great courage and coolness in the chase, and at times a sagacity which has saved the rider's life. When notice has been given that there is a tiger in the neighborhood, the whole station is roused, and preparation to proceed to the cover is commenced; the elephants are prepared, and the tumult which commences before all is ready, between mahouts, dogs, horses, elephants and their masters, can be compared to nothing in this country, where in well regulated hunting establishments, rule and regularity prevail. From ten to thirty of these animals, each carrying a sportsman armed with rifles of various descriptions, generally start for the jungle, though sometimes a field of one hundred elephants have been out, and being arranged in line, commence regularly to beat for game; but having thus brought them to the jungle's edge, we shall allow one more experienced than ourselves to describe the hunt.

"We found immense quantities of game, wild hogs, hog-deer, and the Neil-ghie, (literally blue-cow.) We, however,

strictly abstained from firing, reserving our whole battery for the nobler game, the tiger. It was perhaps fortunate that we did not find one in the thick part of the forest, as the trees were so close set, and so interwoven with thorns and parasite plants, that the elephants were often obliged to clear for themselves a passage by their own pressing exertions. It is curious on these occasions to see the enormous trees these animals will overthrow on a word from their masters, they place their foreheads against the obnoxious plants, twisting their trunks round it, and gradually bending it towards the ground, until they can place a foot upon it. This done, down comes the tree with crashing stem and upturned roots. The elephant must be well educated to accomplish this duty in a gentlemanlike manner: that is, without roaring sulkily, or shaking his master by to violent exertions.

"On clearing the wood, we entered an open space of marshy grass, not three feet high; a large herd of cattle were feeding there, and the herdsman was sitting singing under a bush; when just as the former began to move before us, up sprang the very tiger to whom our visit was intended, and cantered off across a bare plain, dotted with small patches of bush jungle. He took to the open country in a style which would have more become a fox than a tiger, who is expected by his pursuers to fight and not to run; and as he was flushed on the the flank of the line, only one bullet was fired at him ere he cleared the thick grass. He was unhurt, and we pursued him at full speed. Twice he threw us out by stopping short in small stripes of jungle; then, heading back after we had passed, he gave us a very fast trot of about two miles, when Colonel Arnold, who led the field, at last reached him by a capital shot, his elephant being in full career. As soon as he felt himself wounded, the tiger crept into a close thicket of trees and bushes, and crouched. The two leading sportsmen over-

ran the spot where he lay; and as I came up, I saw him, through an aperture, rising to attempt a charge. My mahout had just before, in the heat of the chase, dropped his ankors or goad, which I had refused to allow him to recover; and the elephant, being notoriously savage, and farther irritated by the goading he had undergone, became consequently unmanageable; he appeared to see the tiger as soon as myself, and I had only time to fire one shot, when he suddenly rushed with the greatest fury into the thicket, and falling upon his knees, nailed the tiger with his tusks to the ground. Such was the violence of the shock, that my servant, who sat behind, was thrown out, and one of my guns went overboard. The strugles of my elephant to crush his still resisting foe, who had fixed one paw on his eye, were so energetic, that I was obliged to hold on with all my strength, to keep myself in the houdah. The second barrel, too, of the gun which I still retained in my hand, went off in the scuffle, the ball passing close to the mahout's ear, whose situation, poor fellow, was anything but enviable. As soon as my elephant was prevailed upon to leave the killing part of the business to the sportsmen, they gave the roughly used tiger the *coup de grace*. It was a very fine female, with the most beautiful skin I ever saw."

We shall only give another sketch of a tiger hunt: our last is told by a gentleman, this one shall be from the pen of a lady, herself the heroine of the chase, and will be curious, as we believe it is the only instance upon record.

"We had elephants, guns, balls, and all other necessaries prepared, and about seven in the morning we set off. The soil was exactly like that we had gone over last night; our course lay N. W. The jungle was generally composed of *corinda* bushes, which were stunty and thin, and looked like ragged thorn bushes; nothing could be more desolate in appearance; it seemed as if we had got to the farthest limits of cultivation, or the haunts of man. At times the

greener bunches of jungle, the usual abode of beasts of prey during the day-time, and the few huts scattered here and there, which could hardly be called villages, seemed like islands in the desert waste around us. We stopped near two or three of these green tufts, which generally surrounded a lodgement of water, or little ponds in the midst of the sand.

"The way in which these ferocious animals are traced out is very curious, and, if related in this country, would scarcely be credited. A number of unarmed half-naked villagers, go prying from side to side of the bush, just as a boy would look after a stray sheep, or peep after a bird's nest. Where the jungles were too thick for them to see through, the elephants, putting their trunks down into the bush, forced their way through, tearing up everything by the roots before them. About four miles from our tents we were all surrounding a bush, which might be some fifty yards in circumference, (*all* includes William Fraser, alone upon his great elephant, Mr. Barton and myself, upon another equally large, Mr. Wilder upon another, and eight other elephants; horsemen at a distance, and footmen peeping into the bushes). Our different elephants were each endeavoring to force his way through, when a great elephant, without a *houdah* on his back, called 'Muckna,' a fine and much esteemed elephant, (a male without large teeth,) put up, from near the centre of the bush, a royal tiger. In an instant Fraser called out, 'Now Lady H., be calm, be steady, and take a good aim, here he is.' I confess, at the moment of thus suddenly coming upon our ferocious victim, my heart beat very high, and, for a second, I wished myself far enough off; but curiosity, and the eagerness of the chase, put fear out of my head in a minute; the tiger made a charge at the Muckna, and then ran back into the jungle. Mr. Wilder then put his elephant in, and drove him out at the opposite side. He charged over the plain away from us,

and Wilder fired two balls at him, but knew not whether they took effect. The bush in which he was found, was one on the west bank of one of those little half dry ponds of which I have spoken. Mr. Barton and I conjecturing that, as there was no other thick cover near, he would probably soon return, took our stand in the centre of the open space: in a minute the tiger ran into the bushes on the east side; I saw him quite plain; we immediately put our elephant into the bushes, and poked about, till the horsemen, who were reconnoitering round the outside of the whole jungle, saw him slink under the bushes on the north side; hither we followed him, and from thence traced him by his growling, back to the outer part of the eastern bushes. Here he started out just before the trunk of our elephant, with a tremendous growl or grunt, and made a charge at another elephant farther out on the plain, retreating again immediately under cover. Fraser fired at him, but we suppose without effect; and called to us for our elephant to pursue him into his cover.

"With some difficulty we made our way to the inside of the southern bushes; and, as we were looking through the thicket, we perceived the tiger slink away under them. Mr. Barton fired, and hit him a mortal blow about the shoulder or back, for he instantly was checked, and my ball, which followed the same instant, threw him down. We two then discharged our whole artillery, which originally consisted of two double-barrelled guns, loaded with slugs, and a pair of pistols. Most of them took effect, as we could discover by his wincing, for he was not above ten yards from us at any time, and at one moment, when the elephant chose to take fright and turn his head round, away from the beast, running his haunches almost into the bush. By this time William Fraser had come round, and discharged a few balls at the tiger, which lay looking at us grinning and growling, his ears thrown back, but unable to

stir. A pistol fired by me, shattered his lower jaw-bone; and immediately, as danger of approaching him was now over, one of the villagers, with a matchlock, went close to him, and applying the muzzle of his piece to the nape of his neck, shot him dead, and put him out of pain. The people then dragged him out, and we dismounted to look at him, pierced through and through; yet one could not contemplate him without satisfaction, as we were told that he had long infested the high road, and carried off many passengers. One hears of the *roar* of a tiger, and fancies it like that of a bull, but, in fact, it is more like the grunt of a hog, though twenty times louder, and certainly one of the most tremendous animal noises imaginable."

"A full-grown Tiger was lately in the possession of some natives of Madras, who exhibited it, held merely by a chain: it was, indeed, kept muzzled, except when allowed (which was occasionally done) to make an attack upon some animal, in order to exhibit the mode of its manœuvring in quest of prey. For the purpose of this exhibition, a sheep in general was fastened by a cord to a stake, and the tiger being brought in sight of it, immediately crouched, and, moving almost on its belly, but slowly and cautiously, till within the distance of a spring from the animal, leapt upon and struck it down almost instantly dead, seizing it at the same moment by the throat with its teeth. The tiger would then roll round on its back, holding the sheep on its breast, and, fixing its hind claws near the throat of the animal, would kick or push them suddenly backwards, and tear it open in an instant. Notwithstanding, however, the natural ferocity of these animals, the individual in question was so far in subjection, that, while one keeper held its chain during this bloody exhibition, another was enabled to get the carcase of the sheep away, by throwing down a piece of meat previously ready for the purpose."

They are also capable of affection for the person who

has reared them, who will be recolected after a considerable absence. "A tigress in the Tower, upon her arrival in London, became very erascible and dangerous, from irritation at the crowd and bustle upon the Thames. Her deportment was was so sulky and savage, that Mr. Cops could scarcely be prevailed on by her former keeper, who saw her shortly afterwards, to allow him to enter her den; but no sooner did she recognise her old friend, than she fawned upon him, licked him, and caressed him, exhibiting the most extravagant signs of pleasure; and when he left her, she cried and whined for the remainder of the day."

Tigers have also been induced to breed in captivity, though much less frequently than the lion. Mr. Cross, we believe, has succeeded in breeding six of the former, while his litters of the latter have amounted to no less than twenty four. We are not certain whether any of the tigers bred in confinement have arrived at maturity.

BAY LYNX, OR AMERICAN WILD CAT.

The common wild cat of North America stands very high upon its legs, and has a short tail which is curved upwards at its extremity; which circumstances tend to give the animal an appearance of being somewhat disproportioned. In other respects its physiognomy reminds one strongly of the domestic cat, to which its general aspect and movements are very similar. The residence of the wild cat is usually in woody districts, where it preys upon birds, squirrels, and other small animals, which are taken by surprise, according to the manner of all the animals belonging to the genus *felis*. This animal is about two feet long, and twelve or thirtren inches in circumference.

THE AMERICAN BISON.

Bos Americanus.

PLATE X.—THE BISON.

THE Bison is a native of this country, and but a few years since existed in great quantities in most of our Western and Southern States; but are gradually receding before the white population; and the rifle, as in southern Africa, has here also done its work. They still exist in the north, and roam in countless herds over the prairies that are watered by the Arkansas, Platte, Missouri and the upper branches of the Saskatchewan. They reach to latitude 63° and 64°, and are always to be found in the vicinity of the salt-licks, and in another direction extend to New Mexico and California. The Bison is a fierce and treacherous looking animal; and all those which we have seen exhibited under the title of *Bonassus*, had a most disgusting and sinister look. The head and fore quarter is large, appearing more so by the thick coating of long shaggy hair, covering the head and nape, and almost obscuring the small blood shot-looking eye. The horns are small, tapering, and acute, set far apart, and nearly straight.

The color of the animal is a liver or umber-brown, and its height at the shoulder is upwards of six feet. Twelve or fourteen hundred pounds is a common weight in the fur countries; but they sometimes reach to more than two thousand pounds. The hump is a mass of fat of various size, according to circumstances, and is much esteemed by epicures. The flesh is juicy and well-flavored. The skin, from the fine wool, makes an excellent blanket when dressed, and it is now sold throughout the States, and in many

parts of Europe. The wool has in England been manufactured into a fine cloth. Pemmican is made of the flesh and fat of the American Buffalo.

"The Bison wanders constantly from place to place, either from being disturbed by hunters, or in quest of food. They are much attracted by the soft tender shoots, which spring up after a fire has spread over the prairie. In winter they scrape away the snow with their feet, to reach the grass. The bulls and cows live in separate herds for the greater part of the year; but at all seasons one or two old bulls generally accompany a large herd of cows. In the rutting season, the males fight against each other with great fury, and at that period it is very dangerous to approach them. The Bison is, however, in general a shy animal, and takes to flight immediately on winding an enemy, which the acuteness of its sense of smell enables it to do from a great distance. They are less wary when they are assembled together in numbers, and will often blindly follow their leaders, regardless of, or trampling down the hunters posted in their way. It is dangerous for the hunter to show himself after having wounded one, for it will pursue him, and, although its gait may appear heavy and awkward, it will have no great difficulty in overtaking the fleetest runner. One of the Hudson Bay Company's clerks was descending the Saskatchewan in a boat, and having one evening pitched his tent for the night, he went out at dusk to look for game. It had become nearly dark when he fired at a Bison bull which was galloping over a small eminence, and as he was hastening forward to see if his ball had taken effect, the wounded beast made a rush at him. He had the presence of mind to seize the animal by the long hair on its forehead, as it struck him on the side with its horns, and being a remarkably tall and powerful man, a struggle ensued, which continued till his wrist was severely sprained, and his arm rendered powerless. He

then fell, and, after receiving two or three blows, became senseless. Shortly after, he was found by his companions lying bathed in blood, being gored in several places, and the Bison was couched beside him, apparently waiting to renew the attack had he shown any signs of life. Mr. M'Donald (the clerk above referred to) recovered from the immediate effects of the injuries he received, but died a few months afterwards. When it contends with a dog, it strikes violently with its fore feet, and in that way, proves more than a match for any English bull-dog.

The favorite Indian method of killing the Bison is by riding up to the fattest of the herd on horseback, and shooting it with an arrow. When a large party of hunters are engaged in this way on an extensive plain, the spectacle is very imposing, and the young men have many opportunities of displaying their skill and agility.

The *pound*, as it is termed, is used for taking several kinds of the larger wild animals, and though differently constructed, according to circumstances, is always made upon the same principle of driving the animals within a toil or enclosure where they cannot escape. That for taking the Buffalo has been described by both Captain Hall and Dr. Richardson, who were hunters in the fur countries, "the Buffalo pound was a fenced circular space of about a hundred yards in diameter; the entrance banked up with snow, to a sufficient height to prevent the retreat of the animals that may once have entered. For about a mile on each side of the road leading to the pound, stakes were driven into the ground at nearly equal distances of about twenty yards. These were intended to look like men, and to deter the animals from attempting to break out on either side. Within fifty or sixty yards from the pound, branches of trees were placed between these stakes, to screen the Indians, who lie down behind them to wait the approach of the buffalo. The principal dexterity in this species

of chase is shown by the horsemen, who have to manœuvre round the herd in the plains, so as to urge them to enter the roadway, which is about a quarter of a mile broad. When this has been accomplished, they raise loud shouts, and pressing close upon the animals, to terrify them, that they may rush heedlessly forward towards the snare. When they have advanced as far as the men who are lying in ambush, they also rise, and increase the consternation, by violent shouting and firing guns. The affrighted beasts having no alternative, run directly into the pound, where they are quickly despatched, either with an arrow or gun."

The herds of Bisons wander over the country in search of food, usually led by a bull, most remarkable for strength and fierceness. While feeding, they are often scattered over a great extent of country, but when they move in mass, they form a dense and almost impenetrable column, which, once in motion, is scarcely to be impeded. Their line of march is seldom interrupted, even by considerable rivers; across which they swim without fear or hesitation, nearly in the order that they traverse the plains. When flying before their pursuers, it would be in vain for the foremost to halt, or attempt to obstruct the progress of the main body; as the throng in the rear still rushing onward, the leaders must advance, although destruction awaits the movement. The Indians take advantage of this circumstance, to destroy great quantities of this favorite game; and, certainly, no mode could be resorted to, more effectively destructive, nor could a more terrible devastation be produced, than that of forcing a numerous herd of these large animals, to leap together from the brink of a dreadful precipice, upon a rocky and broken surface, a hundred feet below.

When the Indians determine to destroy Bisons in this way, one of their swiftest footed and most active young men is selected, who is disguised in a Bison skin, having the head,

ears, and horns adjusted on his own head, so as to make the deception very complete; and thus accoutred, he stations himself between the Bison herd and some of the precipices, that often extend for several miles along the rivers. The Indians surround the herd as nearly as possible, when, at a given signal, they show themselves and rush forward with loud yells. The animals being alarmed, and seeing no way open but in the direction of the disguised Indian, run towards him, and he, taking to flight, dashes on to the precipice, where he suddenly secures himself in some previously ascertained crevice. The foremost of the herd arrives at the brink—there is no possibility of retreat, no chance of escape; the foremost may for an instant shrink with terror, but the crowd behind, who are terrified by the approaching hunters, rush forward with increasing impetuosity, and the aggregated force hurls them successfully into the gulf, where certain death awaits them.

About the middle latitude of their range, which is near where the Missouri comes in from the west, they appear to be most numerous; and it is there that they have been described as assembling in such vast herds, sometimes to the estimated number of not less than twenty thousand at one time. It is also there that they are said to attain the largest size, and to be of the most bold and determined character.

Here, in their most appropriate pastures, and accompanied as they are by rivers like seas, and single plains like counties or even kingdoms, a herd of them must be a splendid sight, especially when thrown into a state of agitation by a thunder storm or any other cause of alarm. They are by no means so fleet footed as the more slender-bodied ruminantia; but the enlargement of their bodies forward, the compactness behind, the flowing of the shaggy mane, and the sound which they utter, which is something between

bellowing and groaning, their dark color, and above all their numbers, must have a splendid effect.

In their most southerly latitudes they are migrant, and probably they are so also in their most northerly ones; but there is no reason to suppose that any of them migrate through the extremes of their distribution, which are about two thousand miles asunder, or even over the tenth part of that long distance. The very instinct or tendency, whatever it may be, which renders animals social or gregarious keeps them as a matter of fact and of course to their own herd; and they never quit that but when the others expel them by force, and the reception with which the exiled beasts are greeted by new herds, which they attempt to join, are not of the most courteous nature. Thus it is probable that where the savannah is so large as to admit of the assembly of thousands, they shift only from one part to the other, as the seasons require, approaching the waters in the droughts, and retiring from them during the rains.-

In their more southerly localities, where the character of the seasons is more tropical, and the plains are entirely destitute of herbage, saving only aloes and other esculent plants, they are much more migratory; and have some analogy in their motion to the herds on the plains of Asia. Though even in those places the migration appears to be as much to the hill as to the northward in summer; though they collect in the more temperate forests in winter. In the north they are of much smaller size, and shaggy in their coats, and not so spirited as in those latitudes which are the most congenial to their habits.

They are said not to be naturally vicious, but are easily excited, and then their activity often makes them mischievous. They are capable of a sort of domestication, but are neither very pleasant or profitable on a farm. Their form disqualifies them for animals of draught;

and they take their range where they will, heedless of ordinary fences.

In a natural history point of view these animals are important as being the only species of the ox genus, the existence of which on this continent, at any period of its history has been fully authenticated. There have no doubt been reports of individuals of much larger size, and supposed to belong to another species, which have been seen on the Stony Mountains. But the species which are known differ very much in size: and there is besides some difficulty of judging of the magnitudes of two animals when the one is seen on the mountain, or on an elevation of any kind, and the other on a plain. Deer when seen on a hill-top, projected against the sky, seem giants, and their horns to be the leafless boughs of large trees, but if we follow the same herd till they are in a hollow and look down upon them, they seem the miniatures of their former appear ance. Even the horns of the extinct species seem a little doubtful, for it does not very clearly appear, from any collateral evidence of a peculiar state of vegetation, that North America has undergone any climatal change, which would have rendered the extinction of any species of ruminant animals necessary; at least there is no evidence of any necessity of the kind, unless we are to suppose that some violent catastrophe of nature has intervened; and the posibility of anything which has disturbed the solid strata is precluded by the situation in which the horns are found, which are always such that no catastrophe greater than a mere surface one, such as an inundation arising from the bursting of a lake, or an alteration of the course of a river, can be admitted, indeed can possibly have taken place since those horns formed part of the bodies of living animals.

Besides, when this country was first discovered by Europeans, it was completely stocked with the existing species,

down to the very shores of the Atlantic, so that it was difficult to imagine a country as being better adapted to its native animals than North America was at that time to its bisons. Even now, notwithstanding the disappearance of these animals from the parts which have been settled and cultivated, the immense herds show that there is no falling off in the fitness of the country in those parts where the animals have not been invaded by civilization. South America, too, which appears never to have had any ruminant animals save the *lamas* and *alpacas* of the more alpine districts, has proved, by the vast extent to which the cattle introduced by Europeans have multiplied in the plains, to be well suited for these animals, while in the greater part of Europe, and also in many places of Asia, the numbers of these animals in the wild state, have certainly been diminishing, in situations where they cannot be supposed to have vanished before the progress of population and culture. The unavoidable inference is that, in Europe and great part of Asia, seasonal changes have taken place, and that, too, without any geological catastrophe of which we can find a trace, or even a single circumstance which we can imagine so as to render such an occurrence probable, or even possible, to which nothing analogous has taken place in America. The bisons of the two continents are, no doubt, not the same species. But if deviation from the character of the common ox, which has accompanied civilization and prospered along with it, is to constitute a species, the peculiar characters of the American bison, as deviating farther from those of that animal, make it of the two the more characteristic of a different state of the country. The field for speculation in progressive natural history, which the consideration of these animals would open up is both wide and curious; but the data are few, and it comes not within the scope of a popular work in any other way than as a subject to which attention may be profitably directed.

We shall, therefore, only further remark here that those species of the genus *bos* which have been sometimes classed and described as bisons, and which are all natives of south eastern Asia, partake more of the characters of one or other of the remaining groups of the genus *bos* than they do of those of the true bisons, whether we consider the eastern species or the American as the most typical.

THE AFRICAN BUFFALO.

Bubalus cafer.

PLATE X.

The Buffalo of the Cape has often been confounded with the animal of Southern Europe; but it is entirely of different form, and is a much more ferocious and dangerous animal, and has never yet been domesticated, or used for any laborious purpose. It is an animal, Burchell remarks, found nowhere but in the extra tropical part of Southern Africa, and is widely distinct from every other species of the ox tribe, and most remarkable by its horns, which, though not of more than ordinary or proportional length, are so unusually broad at their base, as to cover their whole forehead, and give to it the appearance of a mass of rock; an appearance to which the ruggedness and unevenness of their surface greatly contribute. Its countenance exhibits a savage and malevolent expression. Its bulk far exceeds that of the ox, although its height is not much greater; but it is altogether more robust and strongly made. Its muzzle, when not young, is but thinly covered with short scattered black hair; that on the under lip, and about the corners of

AFRICAN BUFFALO.

AMERICAN BISON.

We shall, therefore, only further remark here that those species of the genus *bos* which have been sometimes classed and described as bisons, and which are all natives of south eastern Asia, partake more of the characters of one or other of the remaining groups of the genus *bos* than they do of those of the true bisons, whether we consider the eastern species or the American as the most typical.

THE AFRICAN BUFFALO.

Bubalus cafer.

PLATE X.

The Buffalo of the Cape has often been confounded with the animal of Southern Europe; but it is widely differ from it, and is a much more ferocious and dangerous animal, and has never yet been domesticated or used for any laborious purpose. It is an animal, Burchell remarks, found nowhere but in the extra tropical part of Southern Africa, and is widely distinct from every other species of the ox tribe, and most remarkable by its horns, which, though not of more than ordinary or proportional length, are so massively broad at their base as to cover their whole forehead, and give to it the appearance of a mass of rock; to which the ruggedness and unevenness of their surface greatly contribute. Its countenance exhibits a savage and malevolent expression. Its bulk far exceeds that of the ox, although its height is not much greater; but it is altogether more robust and strongly made. Its muzzle, both in old and young, is but thinly covered with short scattered hair; that on the under lip, and about the corners of

AFRICAN BUFFALO.

AMERICAN BISON.

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the mouth, being longer, and somewhat resembling a beard. The wither rises high, but not sufficiently to form a rump. The tail resembles that of the common ox, but is much shorter; and the two spurious hoofs are rather longer in proportion. Its horns turn outwards and downwards, and their points are recurved upwards. The hide is much thicker than that of the ox, and is much valued by the Colonists and Hottentots for its strength. It is of a fierce and treacherous disposition, which, added to its size and strength, renders it dangerous to be attacked without caution, or without the certain means of escape at hand. ——

The frame of this animal is strong and powerfully made, and the species is at once distinguished by the immense mass of horn which defends the forehead. According to Lichtenstein, the rib-bones are of such extraordinary breadth, that they almost unite with one another, so that on the outer side nothing at all is seen of the intercostal muscles.

The African Buffalo is found in abundance in Southern Africa, and stretches along the east coast as far to the interior as has been yet explored. In the colony of the Cape, it is, however, becoming much less plentiful, from the constant warfare kept up against it as well as the other wild animals, and travellers now may look in vain for any fine specimens in the places where they were seen and hunted by La Vaillant, Sparrman and Daniel. All travellers have agreed in the danger of wounding, or intruding incautiously upon the haunts of the buffalo; he is easily irritated, and rushes towards his object with blind fury, bearing down all before him; he possesses also great activity, and in some situations considerable swiftness; and in an attack upon a herd, a place of safe retreat is generally looked for before commencing. They are killed in pitfalls, like much of the larger game, but the Dutch colonists or Europeans make use of the rifle alone,

while the Hottentot prefers following this course on foot, being more active than the animal in seeking a retreat from his pursuit. Mr. Pringle relates the following incident of a buffalo hunt, which we extract as characteristic of the animal and the sport.

"A party of boors had gone out to hunt a herd of Buffaloes, which were grazing on a piece of marshy ground, interspersed with groves of yellow wood and mimosa trees, on the very spot where the village of Somerset is now built. As they could not conveniently get within shot of the game without crossing a part of the *valei* or marsh, which did not afford a safe passage for horses, they agreed to leave their steeds in charge of their Hottentots, and to advance on foot, thinking that if any of the Buffaloes should turn upon them, it would be easy to escape by retreating across the quagmire, which though passable for man, would not support the weight of a heavy quadruped. They advanced accordingly, and under covert of the bushes, approached the game with such advantage, that the first volley brought down three of the fattest of the herd, and so severely wounded the great bull leader, that he dropped on his knees, bellowing furiously. Thinking him mortally wounded, the foremost of the huntsmen issued from the covert, and began reloading his musket as he advanced to give him a finishing shot; but no sooner did the infuriated animal see his foe in front of him, than he sprang up and rushed headlong upon him. The man throwing down his heavy gun, fled towards the quagmire; but the beast was so close upon him, that he despaired of escaping in that direction, and turning suddenly round a clump of copse wood, began to climb an old mimosa tree which stood at the one side of it. The raging beast, however, was too quick for him, bounding forward with a roar, which my informant described as being one of the most frightful sounds he ever heard; he caught the unfortunate man with his terrible horns, just as he had nearly

escaped his reach, and tossed him into the air with such force, that the body fell dreadfully mangled into a cleft of the tree. The buffalo ran round the tree once or twice, apparently looking for the man, until weakened by the loss of blood, he again sunk on his knees. The rest of the party recovering from their confusion, then came up and despatched him, though too late to save their comrade, whose body was hanging in the tree quite dead."

THE ARNEE.

This animal, which is an inhabitant of various parts of India, north of Bengal, far exceeds in size any of the cattle tribe that has hitherto been discovered—it being from twelve to fifteen feet in height. The horns, which are full two feet in length, are erect and semilunar, flattened, and annularly wrinkled, with smooth, round, approaching points. The arnee is seldom seen within the European settlements; but a very young one was picked up alive, in the Ganges, some years ago, which was as big as an immensely large bullock, and weighed nearly three quarters of a ton. A British officer, who found one in the woods in the country above Bengal, describes it as a bold and daring animal, and its form as seeming to partake of the horse, the bull, and the deer. Some of the native princes are said to keep arnees for parade, under the name of fighting bullocks.

THE GREENLAND WHALE.

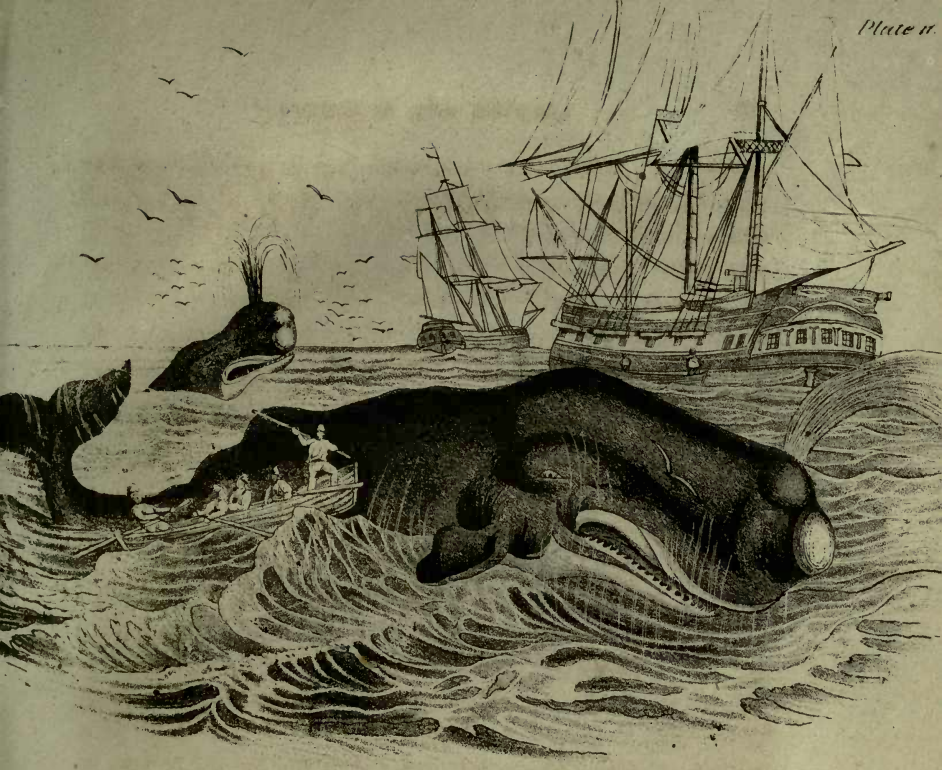
Bonnaterre; Lacepede.

PLATE XI.—THE WHALE.

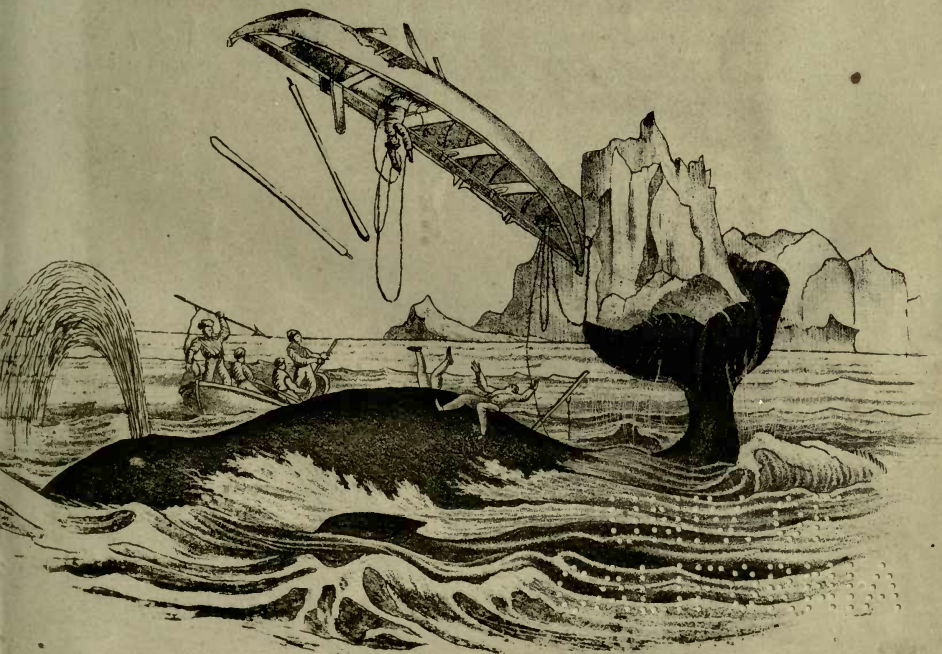
THE Greenland Whale is an object of much importance in commerce to the Polar Seas; it is productive of more oil than any other of the *Cetacea*, and being less active, slower in its motions, and more timid than any other of similar magnitude, hence it is more easily captured.

In former times there was much exaggeration as to the size of this whale, eighty and one hundred feet being assigned as a frequent size, and one hundred and fifty and two hundred feet as not uncommon. Some of the ancient naturalists stated that it attained even a much greater length. From the researches, however, of Scorseby, it seems irrefragably established that the mysticetus at no time ever exceeds sixty-five or seventy feet. He himself was personally concerned in the capture of three hundred and twenty-two, not one of which exceeded sixty feet. He adds, that an uncommon whale which was caught near Spitzbergen, the whalebone of which measured almost fifteen feet, was not so much as seventy feet in length; and the largest actual measurement he has met with is that given by the late Sir Charles Giesecki, who states that in 1813 a whale was killed at Godhaven of the length of sixty-seven feet. Its greatest circumference is from thirty to forty feet.

When full grown, therefore, the length may be stated as varying from fifty to sixty-five, or very rarely seventy feet. It is thickest a little behind the fins, near the middle of its whole length, whence it gradually tapers in a conical form



SPERMACETI WHALE.



GREENLAND WHALE.

towards the tail, and slightly towards the head. The head is remarkably large, as is the case with the other genera, forming nearly one-third of the whole bulk. The under part, the outline of which is given by the jaw-bone, is flat, and measures from sixteen to twenty feet in length, and from ten to twelve in breadth. The lips, of corresponding dimensions, go to enclose the cavity of the mouth in a very striking way. The upper jaw, including the crown-bone, is bent down at its edges, like a boat upside down, so as to shut in the front and upper parts of the cavity of the mouth, When the mouth is open, it presents a cavity as large as a room, and capable of containing a ship's jolly-boat full of men, being fifteen or sixteen feet long, ten or twelve high, and six or eight wide.

The mysticetus has no dorsal fin. The two pectorals are placed about two feet behind the angle of the mouth, and are about nine feet long and five broad. They cannot be raised above the horizontal position; and hence the account given by some naturalists that by them the whale supports its young on its back, must be erroneous. The tail is horizontal; its form is flat and semilunar, indented in the middle; the two lobes are somewhat pointed, and turned a little backwards.

The eyes, which, according to Sir Charles Giesecki and Mr. Scorseby, are not much larger than those of an ox, and with a white iris, are situated in the sides of the head, about a foot obliquely above and behind the angle of the mouth. The sense of seeing is acute in the water, when clear; not so, however, in air. On the most elevated part of the head, about sixteen feet from the anterior extremity of the jaw, are situated the blow holes, consisting of two longitudinal apertures, very similar to the holes in the body of a violin, from eight to twelve inches in length.

The mouth, in place of teeth, contains two extensive rows of baleen, commonly called whalebone, suspended

from the upper jaw and sides of the crown-bone. The plates of baleen are generally curved longitudinally, and give an arched form to the roof of the mouth. They enclose the tongue between their lower extremeties, and are themselves covered by the lower lip. There are upwards of three hundred of these plates on each side of the jaw, resembling a frame of saws in a saw-mill; they are longest in the middle, whence they gradually diminish away to nothing both in front and behind: ten or twelve feet is their usual length. In the youngest whales, called suckers, the baleen is only a few inches long; when the length reaches six feet or upwards, the whale is said to be *size:* a large whale sometimes yields a ton of baleen.

As the formation of the baleen is curious, and forms the most striking peculiarity in this and the next genus, we shall supply some details concerning its formation, principally taken from the account of Mr. J. Hunter. This singular production does not proceed directly from the gum itself, but from a thin vascular substance resting upon it. This substance, which may be called the *nidus* of the baleen, sends out a thin broad process, answering to each plate, on which the plate is formed; so that each plate is necessarily hollow at its growing end, the first part of the growth taking place in the inside of this hollow. Besides this, the plate receives additional layers on the outside, which are formed in the same vascular *nidus* as it extends along the jaw. This part forms a semi-horny substance between each plate, which is very white, rises with the whalebone, and becomes even with the outer edge of the jaw. This intermediate substance fills up the spaces between the plates as high as the jaw, and acts as abutments to the whalebones, keeping them firm in their places.

Mr. Hunter further remarks, "that in the growth of the whalebone three parts appear to be formed; one from the rising cone, which is the centre; a second on the outside;

and a third being the intermediate substance. These appear to have three stages of duration; for that which forms on the cone, I believe makes the hair, and that on the outside makes principally the plate of the whalebone; this, when a certain length, breaks off, leaving the hair projecting, becoming at the termination very brittle; and the third or intermediate substance, by the time it rises as high as the edge of the jaw, decays and softens away like the old cuticle of the sole of the foot."

The *tongue* is incapable of protrusion, being fixed from the root to the tip; a slight beard, consisting of a few short scattered hairs, surmount the anterior extremity of both jaws. The throat is remarkably straight; Sir Charles Giesecki states it does not exceed an inch and a half in width.

The color of the *mysticetus* is velvet-black, grey, and white, with a tinge of yellow. The back, most of the upper jaw, and part of the lower, together with the fins and tail, are black. The lips, the fore part of the lower jaw, sometimes a little of the upper, and a portion of the abdomen are white; and the eyelids, the junction of the tail with the body, a portion of the axila of the fins, &c. are grey. The older the animal, the more they contain of white and grey, and some are all over pie-bald.

The surface of the body is somewhat furrowed; the scarf-skin is not thicker than parchment; the *rete-mucosum* in adults is about three-fourths of an inch in thickness, over most parts of the body; in suckers nearly two inches: it is generally of the same color throughout its thickness. The oliaginous substance called blubber, and constituting the most valuable part of the animal, forms a complete wrapper round the whole body from eight to twenty inches thick. In some old animals it resembles the substance of salmon, whilst in the younger it is yellowish white. The lower jaw, excepting the two bones, consists

almost wholly of blubber, and the crown-bone is covered with it. The oil appears to be retained in the blubber in minute cells; it is expelled when heated, four tons of blubber generally affording three tons of oil; and it in a great measure discharges itself out of the *fenks*,—the square pieces into which it is cut, whenever putrefaction in the fibrous tissue takes place. The blubber in its fresh state is without any unpleasant smell, and hence a Greenland ship is not unpleasant in high latitudes.

The flesh of a young whale is of a red color, and when cleared of fat, broiled, and seasoned with pepper and salt, eats somewhat like coarse beef. That of the old whale becomes blackish, and is exceedingly coarse. The tail is very fibrous and sinewy, and is extensively used, particularly in Holland, in the manufacture of glue.

The *bones* are very porous, and contain large quantities of fine oil; the jaw-bones, which measure from twenty to twenty-five feet, are often taken care of, principally on account of the oil which drains out of them. The external surface of the most porous is compact and hard; the ribs are nearly solid; the number, according to the late Sir Charles Giesecki, is thirteen pair.

The sense of *hearing* in the mysticetus is probably very different in air and water. A noise in the air, such as that produced by persons shouting, is not noticed by it, though at a distance only of a ship's length from it; but a very slight splashing in the water, in calm weather, excites its attention and alarms it.

Being somewhat lighter than the medium in which it swims, the mysticetus can remain at the surface with its spiracles and a considerable portion of its back above water, without any effort or motion. To descend, however, requires an exertion. The proportion which appears above water, when alive, is probably not a twentieth part of the animal; but within a day after death, when the process of

putrefaction commences, it swells to an enormous size, till at least a third of the carcass appears above water, and sometimes the body is burst by the force of the air generated within.

Bulky as the whale is, and clumsy as it appears to be, it might be imagined that all its motions must be sluggish, and its greatest exertions productive of no great celerity. The fact, however, is the reverse. A whale extended motionless at the surface of the sea, can sink, in the space of six seconds, beyond the reach of its human enemies. Its velocity along the surface, and in other directions, is the same, I have observed, says Scorseby, a whale descending, after I had harpooned it, to the depth of about one-fourth of a mile, with the average velocity of seven or eight miles an hour. The usual rate, however, at which these whales swim when on their passage from one situation to another, seldom exceeds four miles an hour, They are capable, however, for the space of a few minutes, of darting through the water with the velocity of the fastest ship under sail; and of ascending with such rapidity, as to leap entirely out of the water. This feat they sometimes perform apparently as an amusement, to the high admiration of the distant spectator; but to the no small terror of the inexperienced fisher. Sometimes the whales throw themselves into a perpendicular position, with their heads downwards, and moving their tremendous tails on high in the air, beat the water with awful violence, which, cracking like a whip, resounds to the distance of two or three miles; the sea is thrown into foam, and the air filled with vapors. This performance is denominated "lob-tailing."

When the animal retires from the surface, it first lifts its head, then plunging it under water, elevates its back like a segment of a sphere, deliberately rounds it away towards the extremity, throws its tail out of water, and so disappears.

The mysticetus usually remains at the surface to breathe about two minutes, seldom longer; during this time it "blows" eight or nine times, and then descends for an interval usually of five or ten minutes; but sometimes, when feeding, fifteen or twenty minutes. According to Scorseby, the whales have no *voice*, but in blowing they make a loud noise. The vapor they discharge is ejected to the height of some yards, and appears at a distance like a puff of smoke: they blow strongest, densest, and loudest when in a state of alarm, or when they first appear on the surface after being a time down. The depth to which they commonly descend is not accurately known; but, when struck, the quantity of line they sometimes take out of the boats in perpendicular descent, affords a good measure of the depth. By this rule they have been known, according to Scorseby, to descend about a mile, and with such velocity, that instances have occurred in which whales have been drawn up from a greater depth than the highest mountains in Scotland, and have been found to have broken their jaws, and sometimes their crown-bone, by the blow struck against the bottom. Whales are seldom found sleeping; yet instances of it have occurred among ice in calm weather.

The *food* of these animals, so vast and strong, is too remarkable not to claim a moment's attention. They have no teeth, and hence we at once perceive they cannot prey on the smaller of their own kind, or on the larger fishes; and their throat is so small, that they could not dispose of a morsel swallowed by an ox. The well provided pasture grounds, however, as they may be called, exhibit, to the contemplation of the curious, one of the most wonderful manifestations of Beneficence and Power. A very considerable portion of those spaces in which this whale is found is occupied by what is called green-water. Something analogous, though of a yellowish or reddish tint, oc-

curs in southern latitudes, as will be afterwards noticed. Captain Scorseby, in 1816, first investigated the peculiarities of the green-water. This accomplished naturalist states, that it forms perhaps one-fourth part of the Greenland sea, between the parallels of 74° and 80°, equal to about twenty thousand square miles. Though it is liable to alteration of position from the action of currents, still it is always found, year after year, near certain situations. It often constitutes long bands or streams, of varying length and breadth, extending 2° or 3° of latitude in length, and from a few miles to thirty or forty in breadth. It is usually an olive-green, and of striking opacity; sometimes it is nearly grass-green, or with a shade of black.

Mr. Scorseby examined the qualities of this water, and, to his astonishment, found that it obtained its color from the presence of immense numbers of animalcules, most of them invisible without the aid of the microscope. The greatest number consisted of the *madusa* kind, belonging to an order with which most of our readers will be familiar, under the vulgar name of sea-blubber, a soft gelatinous substance, often found lying on the sea shore, and exhibiting no signs of life, except shrinking when touched. He found the prevailing specimens to be globular, transparent, and from one-twentieth to one-thirtieth of an inch in diameter. The number of medusa was found to be immense. Mr. S. estimates that two square miles contained 23,888,000,000,000,000; and as this number is above the range of human thought, he illustrates it by observing, that 80,000 persons must have started at the creation of the world to complete the enumeration at the present time. These animalculæ are not to be considered as the immediate food of the whale; they form, however, the food of the various shrimps and minute crabs, lobsters, and sea snails, upon which the monster of the deep is supported. Thus we can see at one glance the common food of this

enormous whale; and its dependence on these minute insects, as well as that of the greater number of animals which inhabit those prodigious and dreary seas, is almost too clear to require demonstration. As before stated, the invisible animalculæ supply nourishment to the innumerable small shrimps, crabs, &c.; they in their turn are the food of the smaller fishes, which again supply nourishment to the larger, which are devoured by seals, dolphins, and other Cetacea; the bear again feeds upon the seal, and thus there is a wonderful dependent chain of existence formed, every link of which seems essential to the integrity of the whole. When this whale *feeds*, it swims with considerable velocity below the surface, with its jaws widely extended. A stream of water consequently enters its mouth, and along with it large quantities of water-insects; the water escapes again at the sides; but the food is entangled and sifted in the baleen, which, from its compact arrangement, and the thick internal covering of hair, does not allow a particle of the size of the smallest grain to escape.

It is presumed the period of *gestation* is nine or ten months, and the whale has but one at a birth, instances of two accompanying the female being very rare. The young one, at the time of birth, is ten to fourteen feet long. According to Sir Charles Giesecki, it turns on the one side on the surface of the water when it gives suck to its young and then the cub attaches itself to the teat. It goes under the protection of its mother probably for somewhat more than a year, till by the growth of the baleen it is enabled to procure its own food. It appears to attain its full growth at the age of twenty or twenty-five. The marks of age are an increase of the quantity of grey colour on the skin, and a change to a yellowish tint of the white parts; a decrease in the quantity of the oil, and an increase in the hardness of the blubber. It is then supposed to attain a great age.

The natural affection of this species is interesting. The

cub being insensible to danger is easily harpooned, when the attachment of the mother is so manifested, as to bring it almost certainly within the reach of the whalers. Hence, though the cub is of little value, yet it is often struck as a snare for the mother. In this case she joins it at the surface whenever it has occasion to rise for respiration, encourages it to swim off, and seldom deserts it while life remains. She is then dangerous to approach, but affords frequent opportunities of attack. She loses all regard for her own safety in anxiety for the preservation of her young, dashes through the midst of her enemies, despises the danger that threatens her, and even voluntarily remains with her offspring after various attacks on herself. In 1811, says Mr. Scorseby, one of my harpooners struck a sucker in hopes of leading to the capture of the mother. Presently she arose close by the "fast boat," and seizing the young one, dragged about six hundred feet of line out of the boat with remarkable force and velocity. Again she rose to the surface, darted furiously to and fro, frequently stopt short or suddenly changed her direction, and gave every possible intimation of extreme agony. For a length of time she continued thus to act, though closely pursued by the boats; and inspired with courage and resolution by her concern for her young, seemed regardless of the danger which surrounded her. At length one of the boats approached so near that a harpoon was hove at her; it hit, but did not attach itself. A second harpoon was struck, but this also failed to penetrate; but a third was more effectual and held. She did not attempt to escape, but allowed other boats to approach; so that in a few minutes three more harpoons were fastened, and in the course of an hour afterwards she was killed. There is something, continues this interesting writer, extremely painful in the destruction of a whale, when thus evincing a degree of affectionate regard for its offspring, which would do honor to the superior intelli-

gence of human beings; yet the object of the adventure, the value of the prize, the joy of the capture, cannot be sacrificed to feelings of compassion.

The mysticetus, though often found in great numbers together, can scarcely be said to be gregarious; for they are found most generally solitary, or in pairs, excepting when they are drawn to the same spot by the attraction of an abundance of palatable food, or a choice situation among the icebergs.

The *habitat* of this valuable species is a point of the highest economic importance, and more especially now, when it has been chased from its older haunts into nearly the impenetrable and certainly the most hazardous recesses of the Polar Seas. In the Athenæum of the current year, January 1836, it is stated, "the whole of the whales which frequent the Polar Seas pass annually to the southward, and may be equally well encountered in the Atlantic Ocean, in well known positions and seasons; that they pass in the months of March and April, about midway between the coasts of Iceland and Newfoundland; and that a much nearer and less dangerous fishery might be established at that season than by the present voyage to the Arctic Seas." The great importance of the point at issue has induced us to give this statement from our much respected cotemporary; though we fear it is inaccurate, and might be adduced as an illustration of the prevailing ignorance concerning the whale tribes. If "the whole of the whales" go southward in March and April, how does it happen that, for hundreds of years, so many have been captured in the Polar Seas during the summer and autumnal months? Another scarcely less serious objection is the decided statement of Mr. Scorseby, the very highest authority on this subject, and which we believe has never been contradicted, that the true mysticetus has never been seen beyond the limits of the Arctic Regions. Besides, the green-water or feeding

grounds of the whale, as well as the molusca and other small animals on which they feed, are rare, or not at all seen, in lower latitudes. Mariners, it is true, often make such statements as the above; they have in this way reported, that great shoals of the largest whales frequent the northern shores of Lapland; and this is so far true; but, on examination, it is found not to be the mysticetus, but the rorquail, which comes next under our review, and we are disposed to think, that "the bodies of whales" will be found to belong to this species, which, we shall presently see, is usually avoided as unworthy of capture.

A description of the more valuable products of the whale will follow in the succeeding sketch of the fishery; but we shall now say a few words of those portions of it which are used in the domestic economy of uncivilized nations.

Although, to the palate of the refined American, the flesh of this whale would be looked upon with abhorrence as an article of food; yet by some of the inhabitants of the borders of the frozen seas, it is regarded as a choice article of subsistence. The Esquimaux eat the flesh and fat, and drink the oil with great greediness. Indeed, some tribes which are not familiar with spirituous liquor, carry along with them in their canoes, bladders filled with oil, which they use in the same way and with a similar relish as a toper does his dram. They also eat the skin of the whale raw, both adults and children; even the infants suck it with apparent delight. Blubber, when pickled and boiled, is said to be very palatable; the tail, when parboiled and then fried, is said to be not unsavory, but even agreeable eating; and the flesh of young whales is by no means indifferent food.

Besides forming a choice eatable, the inferior products of the whale are applied to other purposes by the inhabitants of the Arctic Regions. Some membranes of the abdomen are used for the upper articles of clothing, and the *perito-*

nenm, in particular, being thin and transparent, is used instead of glass in the windows of their huts; the bones are converted into harpoons and spears, for striking the seal or darting at sea-birds, and are also employed in the erection of their tents, and with some tribes, in the formation of their boats; the sinews are divided into filaments, and used as thread with which they sew, with great nicety, the different articles of their dress.

PROCEEDINGS IN CAPTURING THE WHALE.

We will now proceed to give a short sketch of the method practised in capturing the whale. The first object is to fit out a ship adapted for the trade; and constructed, therefore, in such a manner as to possess a peculiar degree of strength. Its exposed parts, accordingly, are secured with double or treble timbers; whilst it is *fortified* internally with ice beams and cross bars, and externally with iron plates, &c. so disposed as to make the pressure on any one part to be supported by the whole fabric. A ship of about three hundred and fifty tons is deemed the most eligible, with a crew of about fifty men; six or seven very light and swift boats are required for the immediate pursuit; and one of the essential requisites is the *crow's nest*, or hurricane-house, invented by the elder Scorseby, a species of watch-tower, made of hoops and canvass, placed on the main-top mast for the use of the master or officer on watch, to shelter him from the blast, where he may be called to sit for hours at the temperature of zero, and whence he can discover all the movements of the surrounding ice or fish, and give directions accordingly.

The whaling vessels, in going north, usually touch at the Shetland Islands, to complete their water, provisions, &c., and leaving the land generally about the beginning of April, they arrive within the Polar Seas before the end of that month. As soon as they reach the haunts of the whale, the crew must be every moment on the alert, keeping watch day and night. The boats, hanging over the ship's side, are ready to be launched in an instant; and when the state of the sea admits, one of them is usually manned and afloat The officer in the crow's nest surveys the waters at a great distance, and the instant he perceives a whale he gives notice to the watch on deck, some of whom start instantly with the first boat, which is immediately followed by a second. Each of the boats has a harpooner and other subordinate officers; and is provided with an immense quantity of rope, carefully coiled and stowed in different parts of the boat, the different parts being spliced together, so as to form a continued line usually exceeding 4000 feet in length. To the end is attached the harpoon. The boat is now rowed towards the whale with the greatest possible speed, in the deepest silence, cautiously avoiding giving alarm: sometimes a circuitous route is adopted in order to approach it from behind. Having reached within a few yards, the harpooner darts his instrument into the giant, who in the surprise and agony of the moment makes a convulsive effort to escape. This is the moment of danger, for the boat is exposed to the most violent blows of the whale's head or fins, and still more of its tail, which sometimes sweeps the air with such tremendous fury, that both boat and men are exposed to a common destruction.

The moment that a wounded whale disappears, a jack or flag is displayed in the boat; on the sight of which, those on watch in the ship give the alarm by stamping on the deck, accompanied by the continued shout of "a fall, a fall." At this signal the sleeping crew are aroused,

jump from their beds, rush upon deck with their clothes tied in a string in their hands, and crowd into the boats. With a temperature at zero, should a *fall* occur, the crew would appear on deck, covered only with their under garments, in the anticipation of dressing themselves, in part at least, as the boats are lowered down, though sometimes they are disappointed, and cannot get the process accomplished for a length of time afterwards.

The first and usual effort of the *flat-fish* is to escape from the boat by sinking under water, plunging with rapid flight under some neighboring mountain of ice, or into the deep abyss. When fleeing from his pursuers, and then darting at the rate of eight or ten miles an hour, the greatest care must be used, that the line to which the harpoon is attached may run off readily along with him. Should it be entangled for a moment, the whale would draw the boat beneath the waves. Sometimes, however, to retard its motion, it is usual for the harpooner to cast one or more turns of the line round a kind of post, called the *bollard*, which is fixed near the stern of the boat for the purpose; and such is the friction of the line, when running round the bollard, that it frequently envelopes the harpooner in smoke; and if the wood were not repeatedly wetted, it would set fire to the boat. Notwithstanding this manœuvre, the line is often run out in eight or ten minutes; its end is then attached to the lines of the next boat, and even those of a third are sometimes put into requisition. When the crew of a boat see there is a prospect of their own store being exhausted, they hold up one, two, three, or more oars, according to the urgency of the required aid; for if none arrives, there is only one resource left, which is to cut the line, and thus lose it, fish and all.

The period during which a wounded whale remains under water is various, but, on an average, may be stated at half an hour. It is sometimes an hour, and more rarely

longer still; and it has been asserted on good authority, that a case has occurred of a wounded whale being dragged up alive after having been an hour and a half continually under water; a singular fact, certainly, in the history of warm-blooded animals. When it remains long under water, it becomes asphyxiated or nearly drowned, and in all instances is greatly exhausted for want of fresh air, and by means of the enormous pressure, equal according to Mr. Scorseby to upwards of 200,000 tons, which exceeds the weight of sixty of the largest ships of the United States Navy, when manned, provisioned, and fitted for a six months cruise.

When the fast fish is under water, the assisting boats take up those positions near to which they calculate he is most likely to rise, in order that one of them at least may be within a *start*, as it is called; that is, within two hundred yards of his place of re-appearing, at which distance they can easily reach him before he is prepared to descend again. On its rising, they hasten towards the spot, and as they reach it, each harpooner plunges his weapon into its back, to the amount of three, four, or more, according to the size of the whale, and the nature of the situation. Most frequently, however, the animal descends a few minutes after receiving the second harpoon, and obliges the other boats to await its return to the surface, before any further attack can be made. After this it is actively plied with long and sharp lances, which are thurst into its body, and aimed deep at its vitals.

At length, when exhausted with numerous wounds and loss of blood, which flows in copious streams, it indicates the approach of dissolution by discharging blood from the spiracles, along with the air and mucus, and finally, jets of blood alone appear. The sea to a great extent is dyed with blood,—and the ice, boats, and men, are sometimes drenched with it. Its track is likewise marked by a broad

pellicle of oil, which exudes from its wounds, and appears on the surface of the sea. The final capture is sometimes preceeded by a convulsive and awful struggle: and in dying, it turns over on its side or back; which joyful circumstance is announced by three loud huzzas, and the striking of the flags. No time is lost, ere the tail is pierced and fastened with ropes to the boats, which drag the carcase to the ship amidst shouts of triumph.

The time requisite for capturing a whale, Mr. Scorseby states, that he has seen a whale despatched in fifteen minutes, and others alive, after severe treatment, at the end of fifty hours. Much depends on the conduct of the animal itself,—much on the activity of the whaler,—and much, also, on the nature of the situation and weather. He states, that the average time does not exceed an hour.

As bearing on this point, and exhibiting the surprising vigor of the mysticetus, we shall here introduce an anecdote related by Mr. Scorseby. In 1817, the Royal Bounty of Leith fell in with whales, at a distance from land or ice, there being at the same time a brisk breeze and clear weather. The boats were manned and sent in pursuit. After a chase of five hours, one of the boats struck the whale about four A. M. The captain followed in the ship, and though for a time he lost sight of them, yet he again descried a boat at eight A. M., with a signal displayed of being fast.

Some time after, he observed another boat approach the fish, a second harpoon struck, and a new signal displayed. As, however, the fish drew the two boats away with considerable speed, it was mid-day before any assistance could reach them. Two more harpoons were then struck; but such was the vigor of the whale, that, though it constantly dragged through the water from four to six boats, together with a length of nearly a thousand feet of line to each, yet it pursued its course nearly as fast as a boat could row; and such was the terror it manifested

on the approach of its enemies, that whenever a boat passed beyond its tail, it invariably dived. All endeavors, therefore, to lance it were in vain. The crews of the loose boats being unable to keep pace with the fish, moored themselves to the fast boats, and for some hours afterwards *all hands* were constrained to sit idle, waiting for some relaxation in the speed of the whale. Its general course had been to windward, but its changing enabled the ship, which had previously been at a great distance, to join the boats at eight, P. M. The vessel took one of the fast lines on board with the view of retarding its progress. The sails were lowered and furled, but after supporting the ship for a few minutes, head to wind, the harpoon lost its hold. The whale immediately set off to windward with increased speed, and, for three hours, the ship could not again approach it. Another line was then taken on board, but immediately broke. A fifth harpoon had previously been struck, but its line was speedily cut. Various schemes for arresting the speed of the fish were then resorted to, which occupied close attention for nearly twelve hours; but its velocity was still such, that the master, who had himself proceeded to the attack, was unable to approach sufficiently near to strike a harpoon. After a long chase, however, he succeeded in getting hold of one of the fast lines, and attached another line to it. The fish then fortunately turned towards the ship. At four o'clock, P. M., thirty-six hours after it was struck, the ship again joined the boats, when, by a successful manœuvre, they secured two of the fast lines on board. The wind was blowing a moderately brisk breeze, and the sails were lowered; but notwithstanding the resistance a ship thus situated must necessarily have offered, she was towed by the fish directly to windward, with a velocity of two knots, during an hour and a half; and then, though the whale must have been greatly exhausted, it beat the waters with its fins and tail in so tremendous a way that the sea around was in a continual foam, and the most hardy of the sailors scarcely dared

to approach it. At length, about eight, P. M., after forty hours of almost incessant exertion, this formidable enemy was slain.

After whale has been caught and secured at the sides of the ship, the next operation is that of *flensing* or securing the blubber and whalebone. This disagreeable process can, with the whole strength of the crew, be effected in about four hours. Each seaman receives a dram, and some of the more important personages receive two. The huge carcass is somewhat extended by strong tackles placed at the snout and tail: a band of blubber two or three feet in width, encircling the fish's body at what is the neck in other animals, is called the *kent*, because by means of it the fish is turned over or *kented*. To this band is fixed the lower extremity of a combination of powerful blocks, called the *kent-purchase*, by means of which, the whole circumference of the animal is, section by section, brought to the surface. The harpooners then, having spikes on their feet to prevent their falling from the carcass, begin with a kind of spade, and with huge knives, to make long parallel cuts from end to end, which are divided by cross-cuts into pieces of about half a ton. These are conveyed on deck, and, being reduced into smaller portions, are stowed in the hold. Finally, being by other operations still further divided, it is put into casks, which is called making-off, and packed down completely by a suitable instrument.

When this flensing is proceeding, and when it reaches the lips, which contain much oil, the baleen is exposed. This is detached by means of bone hand-spikes, bone knives, and bone spades. The whole whalebone is hoisted on deck in one mass, where it is split by bone-wedges into junks, containing five or ten blades each, and stowed away. When the whole whalebone and blubber are thus procured, the two jaw-bones, from the quantity of oil which they contain, are usually hoisted on deck, and then only the *kreng* remains,—the huge carcass of flesh and

bone, which is abandoned either to sink or to be devoured by the birds and sharks, and bears, which duly attend on such occasions for their share of the prey.

It will be readily believed that none of the proceedings which we have now been considering are free from numerous perils. In a high sea the flensing itself is often difficult or impossible; and those upon the body of the fish are exposed to considerable risk. Sometimes they fall into the whale's mouth, at the imminent hazard of being drowned. In the case of a heavy swell, they are drenched, and often washed over by the surge. Occasionally they have their ropes broken, and are wounded by each other's knives. Mr. Scorseby mentions an instance of a man, who, after the flensing was completed, happened to have his foot attached by a hook to the carcass, when it was inadvertently let go. He caught hold of the gunwale of the boat, but the whole immense mass was now suspended by his body, occasioning the most excruciating torture, and even exposing him to the risk of being torn asunder; when his companions contrived afresh to hook the carcass with a grapnel, and brought it back to the surface.

In the account which we have presented of the capture, all circumstances are supposed to be favorable; but often it is the very reverse. A storm may arise, and a fog often envelopes the whole operations; immense islands or floes, i. e., masses of field-ice, may be impelled upon them by the tempest, and with such velocity as to overwhelm them in a moment, or a frost may make them fast in its hard and icy grasp. It is such incidents as these which make this employment one of the most trying and hazardous that can be pursued: while they occasionally lead to the most extraordinary adventures; as examples of which we subjoin a very few narratives of facts.

The whale itself, though for the most part undesignedly, is the cause of the greatest number of accidents which occur. Injuries are often sustained by entanglement with the lines. A sailor belonging to the John of Greenock, in 1818,

happening to slip into a coil of running rope, had his foot entirely cut off, and was obliged to have the lower part of the leg amputated. A harpooner belonging to the Hamilton, when engaged in lancing a whale, incautiously cast a little line under his foot. The pain of the lance induced the whale to dart suddenly downwards; his line began to run out from under his feet, and, in an instant caught him by a turn round the body: he had just time to call out, "clear away the line—oh dear!" when he was almost cut asunder, dragged overboard, and never seen afterwards. The following graphic and tragical scene is taken from Mr. Scorseby's Journal. Two boats belonging to the Baffin of Liverpool having been many hours absent from the ship, and occasioned much anxiety, were at last descried pulling towards the ship. On their approach we were a little surprised by some unusual appearances, particularly their want of their proper complement of oars, and the solemn countenances of the rowers. As soon as they came within hail I inquired what had happened. "A bad misfortune, indeed," was the answer: "we have lost Carr!"—the principal officer of the boat. The particulars were as follow: The two boats which had been so long absent had in the outset separated from their companions, and allured by the chase of a whale, they proceeded till they were far out of sight of the ship. The whale led them amidst a great shoal; one rose so near the boat of which Carr was harpooner, that he ventured to pull towards it, though it was meeting him, and offered but an indifferent prospect of success: he, however, succeeded in harpooning it. The boat and fish passing each other with great rapidity after the stroke, the line was jerked out of its place, and instead of "running" over the stern, was thrown over the gunwale; its pressure in this unfavorable position so careened the boat that the side sank under water and began to fill. In this emergency the harpooner, who was a fine active fellow, seized the line and attempted to relieve the boat by restoring it to its place; but a turn of the line flew over his arm, in

an instant dragged him overboard, and plunged him under water to rise no more! So sudden was the accident, that only one man, who had his eye upon him at the moment, was aware of what had happened; so that when the boat righted, which it immediately did, though half full of water, they all at once, on looking round at an exclamation from the man who had seen him launched overboard, inquired, "What had got Carr?" It is scarcely possible to imagine a death more awfully sudden or unexpected. The accident was, indeed, so instantaneous that he had no time for the least exclamation; and the person who witnessed his extraordinary removal observed, that it was so exceedingly quick, that, although his eye was upon him at the instant, he could scarcely distinguish the object as it disappeared.

A large whale became the subject of a general chase, says Scorseby, on the 23d of June. Being myself in the first boat which approached the fish, I struck my harpoon at arm's-length, by which we fortunately evaded a blow which appeared to be aimed at the boat. Another boat then advanced, and another harpoon was struck, but not with the same result; for the stroke was immediately returned by a tremendous blow from the fish's tail. The boat was sunk by the shock, and at the same time whirled round with such velocity that the boat-steerer was precipitated into the water on the side next to the fish, and carried down to a considerable depth by its tail. After a minute or so, he arose to the surface, and was taken up along with his companions into another boat.

Some boats of the Aimwell, on the 26th May, being in pursuit of whales, harpooned one. When struck, this individual only dived for a moment, and then rose again beneath the boat, struck it in the most vicious manner with its tail and fins, stove, upset it, and then disappeared. The crew, seven in number, got on the bottom of the boat; but the unequal action of the lines, which remained entangled

with the boat, rolled it over occasionally, and thus plunged the crew repeatedly into the water. Four of them, after each immersion, recovered themselves and clung to the boat: but the other three were drowned before assistance could arrive. The four men being rescued, the attack on the whale was continued, and two more harpoons were struck. But the whale, irritated instead of being enervated by its wounds, recommenced its furious attack. The sea was in foams: its tail and fins were in awful play; and, in a short time, harpoon after harpoon drew out, and the fish escaped.

We produce the following account, not because we believe it refers to the Greenland whale, (we think it did not) but because the adventure elicited the statement that the same feat is often exhibited by it; as is true, we believe, of all the larger genera. Dr. Foster, indeed, in Cook's Voyages, very clearly tells us he saw it in the southern rorqual, as will be found in our account of that animal. The following anecdote is extracted from the interesting fragment of Captain Bazil Hall, and occurred when that gentleman was midshipman on board an English ship of war, the Leander, which was lying at the time in the roads of Bermuda. As on the former occasion, a great whale, between fifty and sixty feet in length, which was embayed within the coral rocks, and swimming about the vessel, soon attracted the attention of the crew. All hands crowded into the rigging to see it floundering about, till at length some one proposed to pay him a visit in one of the ship's boats, "and away we (viz. some of the midshipmen,) went," says the Captain, "in our wild-goose whale-chase. All eyes were now upon us, and, after a pause, it was agreed unanimously that we should run immediately on him and take our chance. So we rowed forward, but the whale slipped down out of sight, leaving only a monstrous pool, in the vortex of which we continued whirling about for some time. As we were lying on our oars, and somewhat puzzled what to do next, we beheld

one of the most extraordinary sights in the world; at least I do not remember to have seen many things which have surprised me so much, or made a deeper impression on my memory. Our friend the whale, probably finding the water disagreeably shallow, or perhaps provoked at not being able to disentangle himself from the sharp coral reefs, or from some other reason of pleasure and pain, suddenly made a leap out of the water. So complete was this enormous leap, that for an instant we saw him fairly up in the air, in a horizontal position, at a distance of at least twenty perpendicular feet over our heads! While in his progress upwards, there was in his spring some touch of the vivacity with which a trout or salmon shoots out of the water; but he fell back again on the sea like a huge log thrown on its broadside, and with such a thundering crash as made all hands stare in astonishment, and the boldest held his breath for a time. Total demolition, indeed, must have been the inevitable fate of our party, had the whale taken his leap one minute sooner, for he would then have fallen plump on the boat. The waves caused by the explosion spread over half the anchorage; nor, if the Leander herself had blown up, could the effects have extended much farther."

"In one of my earliest voyages," remarks Mr. Schorseby, on another occasion, "I observed a circumstance which excited my highest astonishment. One of the harpooners struck a whale, it dived, and all the assisting boats had collected round the fast boat before it arose to the surface. The first boat that approached it advanced incautiously. It rose with unexpected violence beneath the boat, and projected it and all the crew to the height of some yards into the air. It fell on its side, and cast all the men into the water; one was somewhat injured, but the rest escaped."

Captain Lyons of the Raith of Leith, in 1802, despatched four boats after a large whale on the coast of Labrador,

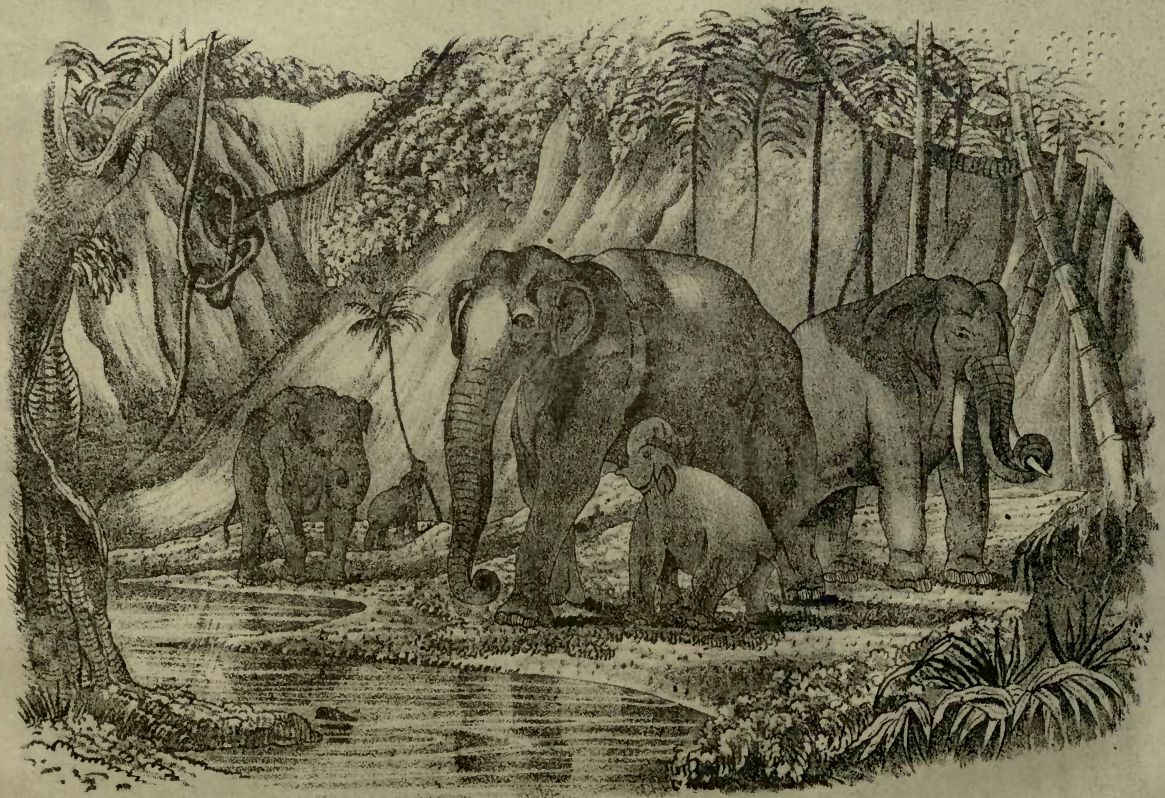
and two of them succeeded in approaching so closely together, that two harpoons were struck at the same moment. The fish descended a few fathoms in the direction of another of the boats, which was on the advance, rose beneath it, struck it with its head, and threw the boat, men and apparatus about fifteen feet into the air. It was inverted by the stroke, and fell into the water with its keel upwards. All the people were picked up alive by the fourth boat except one man, who, having got entangled in the boat, fell beneath it and was drowned.

The following anecdote illustrates the dangers arising from the ice. On the commencement of a heavy gale of wind, May 11, 1813, fourteen men put off in a boat from the Volunteer of Whitby, with the view of fixing an anchor on a large piece of ice, to which it was intended to moor the ship. The ship approached on a signal being made, and a rope was fixed to the anchor; but the ice shivering with the violence of the strain when the ship fell astern, the anchor flew out, and the ship went adrift. She attempted again to approach the ice, but in vain, owing to the violence of the gale, and scudded to leeward; thus leaving fourteen of her crew to a fate the most dreadful, the fulfilment of which appeared almost inevitable. The temperature was 15° Fahrenheit, when these poor fellows were left upon a detached piece of ice of no considerable magnitude, without shelter from the inclement storm, and deprived of every means of refuge, except a single boat, which, on account of the number of men and the violence of the storm, was incapable of conveying them to their ship. Death stared them in the face whichever way they turned, and a division of opinion ensued. Some were wishful to remain by the ice; but it could afford them no shelter, and would probably be soon broken to pieces by the increasing swell: others were anxious to attempt to join their ship whilst she was yet in sight; but the force of the wind, the violence of the sea, and the smallness of the

boat, were objections which would have appeared insurmountable to any but men in a state of despair. Judging that, by remaining on the ice, death was but retarded for a few hours, as the extreme cold must eventually benumb their faculties, they determined to make the attempt of rowing to the ship. Poor souls! What must have been their sensations at this moment? They made the daring experiment, when a few minutes trial convinced them that the attempt was impracticable. They then, with longing eyes, turned their efforts towards recovering the ice which they had left; but their utmost exertions proved unavailing. Every one of them now considered his doom as sealed: how great then must have been their delight, and how overpowering their sensations, when, at this critical juncture, a ship appeared in sight. She was advancing directly towards them: their voices were extended, and their flag displayed: though not heard, they were seen; and their mutual courses being so directed as to form the speediest union, a few minutes saw them on the deck of the Lively.

But we must draw these interesting anecdotes to a close, and we shall do so by epitomizing a narrative from the Journal of Mr. Gibson, surgeon of the Trafalgar, which especially illustrates the great and numerous dangers which arise from icebergs, or more properly ice-islands. "August 12th, 1822, four, P. M. Blowing a fresh gale with rain; the floe to which the ship was made fast set down under the lee-ice, so as to render our situation perilous. Towards midnight we became unexpectedly entangled among heavy pieces of ice and *floes*, where the ship received some severe blows on her beams. Finding it impossible to get out, we lay to, and in half an hour the ship was close beset. Though I had retired to bed when the ship was enclosed, I expected every minute to be called to quit the ship. About three, A. M., a large piece of ice pressing on the ship opposite my bed-cabin, broke two or three timbers with a dreadful noise. Thinking all was

over, I sprang out of bed. On going upon deck, I found to my great consternation that the ship was under an enormous pressure from numerous huge masses of ice surrounding her on all sides, without an opening of water sufficient for a boat within two miles; and no other ship was in sight, though the weather was clear. Most of the crew were preparing for shipwreck, and many of the people were supplicating Divine Mercy for deliverance. At nine A. M. most gave up all hopes of saving the ship, and mine were very faint of saving ourselves. Four days' allowance were cooked with all speed; other provisions were taken upon deck, and every thing of importance placed in readiness to be thrown on the ice. At eleven A. M. however, our drooping spirits were greatly revived by observing a slight relaxation of the pressure; but in half an hour we were again thrown into despair by the return of the pressure. At noon, a man on the mast head saw a ship (the Baffin), on which we instantly made signals of distress. At this time a dead silence prevailed throughout the ship; the crew looked on one another in awful suspense. At one time the pressure was so strong that the pannels of the Captain's state-room were forced out of their framing. About half an hour after this the ship was suddenly thrown upon her larboard side, on which all hands sprang upon deck. I shall never forget the confusion of the poor men, nor their wild looks when they gained the deck; for half of them were below at the time of the shock, and from the smallness of the hatch, only one could get up at a time. Some leaped upon the ship's side and were going upon the ice, when the Captain cried out to them to behave like men and stick to the ship as long as she remained above water! We all stood on that part of the ship nearest the ice, with our bags of clothing on our shoulders. For fifteen minutes we had patiently waited our doom; when by the interposition of Divine Providence, the wind changed,—the ice began to set off



ELEPHANT MALE and FEMALE

from the ship, and in fifteen minutes more she recovered her upright position. The water now rapidly spread among the surrounding ice, and finally, the vessel was warped out and floated uninjured on the waves."

ELEPHANT.

(Elephas.)

PLATE XIII.—THE ELEPHANT.

A genus of *Pachydermatous* or thick-skinned mammalia, belonging to that division of the order to which Cuvier gives the name of *Proboscidea*, or animals which have the nose or upper lip elongated, and forming a trunk or proboscis, or other prehensile instrument.

The elephant has but few characters in common with the rest of the order *Pachydermata;* and indeed that order is among the most perplexing in all the mammalia, because the mere thickness of the skin is not a good ground of classification. Thus it is impossible to give, under the title of the order, any general account of all the genera; and therefore it becomes necessary to enter a little more into detail of the characters of each genus.

There is perhaps no animal respecting which less apology is necessary in this respect than the elephant. In point of size and strength, it stands foremost in the whole class of land animals; and though its sagacity and docility have been greatly overrated, it is to a considerable extent tractable, and in so far a sagacious animal. We use these words in an animal sense of course, and not with any reference to docility and sagacity as predicated of human beings; and we may mention that the boasted sagacity of the elephant is vastly inferior to that of many varieties of the dog.

Still the elephant is highly interesting in very many

points of view. It has been connected with the power and state of eastern nations from very early times; and before the invention of fire-arms, the elephant was regarded as a very powerful auxiliary in war, and numbers of them were brought into battle, not only in Asia, but in some parts of eastern Europe. Even now the elephant is a useful appendage to an Indian army; but it is chiefly as a beast of burden, in the transportation of artillery, and of baggage which is too heavy for the more ordinary carrying animals. He is also used as an appendage of state, for which purpose himself and the *houdah* or *crib*, which is fastened on his back, are both decked out in the most gorgeous manner. But though the elephant has thus been made the servant of man for many purposes, almost from time immemorial, it has never been tamed or domesticated in the proper sense of the word. Elephants have never lived in what may be called companionship with society, and under the protection of man, as has been the case with the dog, the horse, and many other animals. There are a few rare instances recorded in which elephants have bred in a state of confinement, but those instances form the exception—the rare exception, and not the rule; and on account of them we cannot venture to say that the elephant has ever been a domestic animal.

There is another point of view in which the elephant is of great interest, especially to those who study the history of nature in its connexion, both of place and of time. Of living elephants there are only two species, the Asiatic and the African, though there are several varieties, apparently climatal, of the former one. Of these there is not a vestige in any other part of the world than those in which they are at present found, unless it be the accidental bones of one which has been brought from its native country for the purpose of exhibition, and which, perishing before the establishment of museums in which the bones of strange animals are industriously collected, had been buried by

the way side. There are some rather ludicrous instances of the bones of such elephants being dug up, after the appearance of the animal at the place had been forgotten, and gravely considered as the bones of antediluvian or other giants of the human race. The countries in which only the two existing species of elephant are found, all have the tropical character; and as there is no evidence of the animal being naturally out of them, we must conclude that both are adapted to the forests and marshes of those countries, and to them only.

There is, however, a third species of elephant, of which there is no living specimen, though the remains of it are abundant. Those remains are found in very great numbers in the northern parts of Asia, and especially near the shores of the Polar Sea in that quarter of the world; but they are not found to the northward of the Lake of Aral, so that the central plains of Asia do not appear ever to have been an elephant's country; but if we suppose, as is most probable, that the two races were co-existent at some former period, we must suppose that that country, which is in all probability the native one of the horse and the wild ass, formed a sort of natural boundary between the pastures of the southern elephant of Asia and the northern one.

In Europe the remains of this elephant are not so numerous as they are in Asia; but as is the case there, they are confined to the northern parts; and we are not aware that any vestige of them has been found to the southward of that parallel which forms their southern limit in Asia, and which answers to nearly about the middle of France. There are some few of those remains in Britain, though they are not so numerous there as in some places of the continent. This elephant was not, like the two which are natives of tropical countries, confined to the eastern continent, for the bones have been met with in America, though not in any place further to the southward than about the parallel of the south of Spain, which, if we take the two

continents according to the average of their present temperature, will answer to about the same limit in point of heat as that which marks the southern boundary of those animals in the eastern continent. We mention these few particulars in the meantime to show that the elephant has a longer and more interesting tale to tell, than is to be found in all the anecdotes which are repeated of it as a living animal, and which even though we discount the exaggerations and the misrepresentations respecting qualities which the animal does not and cannot possess, but still is not entirely divested of interest,—passing over these in a great measure, we shall first give some account of the appearance and characters of the living elephant, without any distinction as to species, and then very briefly point out how the Asiatic and the African differ from each other, and how the northern or fossil elephant differs from both.

Generally speaking, the skin of the elephant is of a dusky black, with only a few hairs scattered over the general surface; but on the top of the head the hairs are much closer, and about the same length as hogs' bristles, to which indeed they bear no inconsiderable resemblance. A very imperfect notion of the appearance and texture of the skin of the elephant is obtained from examining the specimens which are shut up in menageries in this country, even in those places where they are treated with the greatest kindness and care. Their skin is invariably callous, and often apparently chapped or cracked into pieces, which have little or no sensibility. But when the animal is in good health and in its proper climate, and at its freedom, the skin is smooth and soft, and is probably almost as sensitive to the bite, even of a small insect, as the thinnest skin that can be imagined. When the animal is in this condition, there is indeed a wonderful power in the muscles of the skin, so that by the agitation of that alone, an elephant is often capable of shaking off a wild beast. There is another difference of appearance

between the elephant of the European shores and the elephant in its native forests, which it is necessary to attend to for the purpose of not being misled. The confined elephant has the skin loose and wrinkled, and apparently too big for it, whereas in a state of nature the skin is comparatively tight, and there is considerable plumpness in the appearance of the animal. It is probable that this difference, by means of which the confined elephant shows to so little advantage, is owing to the action of the colder climate on the skin; and this is another proof that the skin of the elephant possesses a good deal of sensibility when the animal is in proper health. This is indeed the case with the greater number of the *Pachydermata*, which really have the skin more sensitive than many of the thin-skinned animals; and thus, in so far as they are concerned, the usual associating of the epithet "thick-skinned" with the fact of want of feeling is incorrect.

The head of the elephant appears rather small in proportion to the size of the animal, but the form of the outline (in the Asiatic elephant particularly, which has the front line nearly straight,) gives it an expression of intelligence. The eye adds considerably to this expression; for though very small in proportion to the size of the animal, it is bright and expressive. The ears are large and pendulous, though smaller in the Asiatic than in the African. The body is thick in proportion to its length, and considerably arched in the line of the back, which gives the animal great strength in carrying. The legs are also very stout and massy. The feet are not divided into toes externally visible; but there are five short flat nails on each of the fore-feet, and four on each of the hind ones. The feet and legs, though apparently stiff and awkward, are not so in reality. The fore-foot can be used with considerable adroitness as a sort of hand, in conjunction with the trunk, and both feet are used in stamping the enemies of the animal to death. The tail is slen-

der, and nearly naked for the greater part of its length; but it has a thick brush at the point, which, in the healthy animal, reaches nearly to the ground.

In size, elephants differ considerably; but when full grown they are rarely less than seven feet in height at the shoulders, or more than twelve. When they are below seven feet they are not considered fit for hard service, and none are purchased for the use of the British army in India, which do not stand this measure. The females, which are the most docile, are very seldom above eight feet; but the males are often considerably more. The following are the dimensions of a male measured in India, which was considered to have attained its utmost growth: from the line of the forehead to the insertion of the tail, fifteen feet eleven inches; perpendicular height at the shoulder, ten feet and a half; measure across the shoulders from the ground on the one side to the same on the other, twenty-two feet two inches and a half; and height of the crown of the head from the ground, set up as it is when the animal marches in state, twelve feet two inches. As the proportions of these measures to each other may be considered as pretty constant in adult elephants of all sizes, they will serve to give a general idea of the form of the animal.

The most singular organ in the elephant, and the one which most distinguishes it from all other living animals, is the proboscis or trunk, which, though one would not be apt to believe so from seeing it in a state of repose, is probably, the human hand only excepted, the most curious mechanical instrument in the whole animal kingdom. This proboscis is an extension of the snout of the animal, of a tapering or subconical form, and sometimes as much as eight feet in length. The two perforations in it, which answer the purpose of nostrils, can draw in water, or spout it to a considerable distance; and as the elephant cannot drink directly with the mouth, unless when immer-

sed in water as far as the opening, the trunk answers the purpose of a drinking horn, as the animal can suck it full, and then, elevating the head and the basal part, and recurving the extremity downwards and inwards, blow the whole contents into the mouth. The extremity of the proboscis is on the upper side formed into a sort of rounded lip, which bears some analogy to the fingers of a hand, while the underside terminates in a single elongated tubercle, which has the same analogy to the thumb. The body of the trunk is made up of an immense number of muscles with their tendons, amounting in all to not less than four thousand, which is considerably greater than the number in the whole human body. Those muscles have their insertions in the external and internal coverings of the trunk; and they lie in a great variety of directions, some longitudinal, some nearly circular, and some oblique. The variety of motions which may result from the union of so many moving forces, so differently placed with regard to each other, and of which we may suppose any number, from one to the whole, capable of moving at one time, is far greater than any ordinary arithmetic can sum up. The most powerful motion of the trunk is that of the under side; and when it curls round, which it sometimes does so as to form two hands, one by the curling fold, and one by the lip and tubercle at the end, the curl is always downwards, though it can complete a ring of the curl someway up the trunk, and leave a portion of the extremity free, by which means the prehensile part at the extremity can act upon what is held in the fold. The oblique muscles enable the trunk to be twisted, so as to place the loop of the fold longitudinally; and with the trunk placed this way an elephant will hold a bottle and extract a cork with the greatest neatness. The oblique muscles also act in elongating and shortening the trunk, in a manner similar to that in which many of the *Annelidæ*, or ringed animals can elongate and shorten their whole bodies. The trunk itself

from the great number of its muscles, is a very powerful instrument, and by means of it the animal can tear down a stong branch of at ree, lift a considerable weight or strike a very severe blow. Upon examining the head of an ele phant either in front or in profile, it will be seen that the insertion of the trunk is peculiarly strong. The bones of the lower part of the face are massy, and strongly arched ; the neck is nearly of the same thickness as the head, and the muscles by which it is connected to the body are very powerful. The elephant does not butt with this powerful part of the head, as is done by various ruminating animals, but it can push along a very heavy weight, or break through a strong paling, by the dead pressure of its snout. Where tame elephants are used, this property is often turned to considerable account; and those elephants which are in the service of the Indian merchants, may often be seen doing the work of a dozen porters in pushing about bales and boxes, and rolling heavy casks. In the wild state the trunk answers many important services. With it he gathers his food and puts it into his mouth, draws up water to quench his thirst, or to sprinkle his body, and collects dust, which he throws over his skin to disperse the mosquitoes and flies that annoy him. On all occasions he is most careful of his trunk, and unless when tied and picketed, he seldom uses it as a means of offence. The males use their tusks for this purpose, and the females endeavor, by falling upon the tiger, to crush him by their weight. The fact is that though elephants are exceedingly peaceable animals in their native haunts, unless when they are annoyed, or in the rutting season of the males, at which time they are in a state of excitement bordering upon fury, and are formidable to tigers, and all other beasts of prey, and even to the rhinoceros himself, which, though perhaps a stronger animal in proportion to his size than the elephant, is not so susceptible of violent passions or so active in his motions.

Next to the trunk the most remarkable external character of the elephant is the tusks. These occupy the place of the ordinary canine teeth of animals, or rather perhaps that of the two great incisive teeth in the upper jaw, which belong to several of the *rodent* or gnawing animals, and to some of which the real teeth of the elephant bear a considerable resemblance, at least in the substances of which they are composed. The teeth, or rather tusks of the elephant are not inserted by simple roots into the jaw or nasal bones, they are for a considerable part of their length towards the root hollow, and inserted in a conical core, which perhaps gives them a firmer footing than if they were placed in sockets. These teeth form the well known substance, the ivory of commerce, and they often attain a very large size in the old males, the quantity of ivory in a single pair being sometimes at least one hundred and fifty pounds weight.

In the living elephants of both varieties, the tusks are either nearly straight, or curved upwards, or if their direction be nearly that of the line of the face they are inclined forward at the points. In the fossil elephant, on the other hand (at least in all the specimens which have been found) the curvature of the tusks is the other way, or downwards. What may be the use of this difference of structure is not easy to say, because we know nothing of the habits of the extinct elephant, and very little of what the state of the country may have been when it was alive; but, as the tusks in it are so constructed as that they might act as hooks in pulling down substances higher than itself, and as it is probable that the northern marshes were at that time covered with tree ferns, and those other palm-like plants, of which the remains are abundant in the fossil state, though not a vestige of the same plants now appears on the surface of the same regions, we may, perhaps, venture to conclude that those tusks had been employed in pulling down

the fronds of those plants, in order that the animals might feed upon them.

The tusks of the elephant are two in number, and they vary much with the age and sex of the individual, and there appear to be also permanent varieties of this kind, the cause of which is not known. In the females they are generally much smaller than in the males; and it is not till the female has attained the age of several years, that they project beyond the mouth. In India, where elephants are most used, and therefore more attended to than in any other part of the world, there are several distinctions made from the size and shape of these extremities. The perfect elephant, called *pulley dant*, has the tusks projecting forwards and upwards. Those called *dauntelah*, or elephants with large teeth, vary from the projecting horizontal, to the nearly straight tusks of the mooknah, which point directly downwards. Between these two there is a great variety in the form of the tusks. The largest teeth found in the male elephant, are from five to eight feet in length, and from four to eight inches in diameter, and weigh from twenty to eighty pounds each tooth. In the mode of their growth, though not in their substance, their tusks bear a much nearer resemblance to the hollow horns of the ruminantia; and, indeed, from the vast quantity of animal matter, and the comparatively small portion of salts of lime, ivory approaches, perhaps, as near to horn as it does to bone, and more so than to enamel, of which the tusks of the elephant contain little or none. In their very young state, elephants have milk-tusks, which have very little adherence to the bones of the head; those drop off when the animal is about fourteen or fifteen months old, and soon after the permanent tusks make their appearance, and are not shed while the animal lives. They continue growing by a new layer of ivory on the inner surface, which is secreted by the pulpy substance on the core filling the

hollow, just as is the case with the horn of an ox; and as each of these new layers is a complete cone of ivory, extending to the very point of the core, the solid part of the tusk increases in length, in proportion to the general growth of the whole.

There are no cutting teeth in the lower jaw of the elephant, or indeed any other teeth answering to the tusks of the upper jaw. The rest of the teeth have their crowns, generally speaking, flat, but from the way in which they are constructed, they are well adapted for cutting and bruising those hard substances upon which elephants are at times obliged to feed. Those teeth which are the only useful ones to the animals in preparing their food for the stomach, may be compared to a set of irregular chisels placed across the jaw, and supported in the intervals by a substance much softer, and bearing some resemblance to the ivory of the tusks, though probably not so hard, and containing more animal matter. The protuberant ridges, which we have said resemble irregular chisels, are formed of the hardened enamel, and though from the quantity of food which so large an animal requires, they are subject to wear, they are always higher than the intervening substance by which they are supported; but it is probable, also, that this substance, being in so far elastic, gives way a little when the food requires a powerful bite.

In the Asiatic elephant, which is the only one of which the progress has been accurately observed, the first grinders, or milk-teeth, as they are called, begin to cut the surface as early as nine or ten days after the birth. Those grinders consist of four laminæ, or ridges of enamel; but they are altogether of soft texture, so that they soon wear away. They are not shed, as is the case with the milk-teeth of some other mammalia, and with the milk-tusks of the elephant itself, but are worn away gradually while the second set are coming forward; and by the time that these are full grown, which is the end of about the second

year, the body of the first ones is completely worn away, the roots are absorbed, and every vestige of the teeth is obliterated. The second teeth contain eight or nine laminæ, or about double the number in the first, and the jaws lengthen proportionately to give them room. When the second set are perfected, and have to perform the whole labor of mastication, by which they are to be in time worn away, the third immediately begin to form in the rear of them; and they continue growing from the end of the second to the end of the fifth year, by which time the second teeth are nearly exhausted, and the third occupy their place. These third ones have twelve or thirteen laminæ, and are consequently much longer, that is, they occupy a greater length of the jaw than their predecessors: and the jaw itself of course lengthens in proportion. The third set lasts from the beginning of the sixth year to the end of the ninth, at the last of which periods it gives place to the fourth set, on which the number of laminæ to each tooth is fifteen or sixteen. This process goes on during the life of the animal, every succeeding set of teeth consisting of a greater number of laminæ, occupying a greater length of the jaw, and requiring at least a year longer than its predecessor to bring it to maturity.

We have been thus particular in describing the mode of dentition in the elephant, because there is nothing like it in the whole animal kingdom; and as it evinces a power of reproduction without end in the teeth which those animals use in feeding, it may be considered as an indication of great longevity; the more so that the teeth of most animals are the parts of them which are apt to suffer the earliest decay. There is something slightly analogous to this in the cutting teeth of some of the *rodent* animals, especially in those which have to gnaw bark and other hard substances for their food; and these are the teeth which in their substance most resemble the teeth of the elephant. Those teeth in the *rodent* animals are, however, simply cut-

ting teeth, and not used in bruising or grinding their food; they are therefore simple chisels, with a layer of enamel on the front side, and the supporting substance, which is similar to ivory, placed behind, and so much lower on the gum as to allow the cutting edge of the enamel to act. Those teeth grow for life, as well as the teeth of the elephant; but they do this, not in the replacement of the old tooth by a new one, but by the growth of the same individual teeth at the roots as they are worn away at the points. Thus the analogy between them is comparatively a very slight one; and the elephant must still be allowed to be the only possessor of that singular reproduction of the teeth, by which it is distinguished from every other known animal.

But though this reproduction of the teeth is in itself a very decided proof that elephants are long-lived animals, it furnishes us with no data whereby we are able to ascertain the exact age to which they live. Nor have we sufficient knowledge of elephants in a state of nature for enabling us to get at the fact by observation, as elephants in this state are not often seen, except when they are to be captured for servitude, or hunted for the sake of their tusks, the last of which, probably, conduces the most to their extermination. There are recorded instances, however, of elephants living to the age of one hundred and fifty years in a state of servitude; and if we add half to that period, or even double it, we shall not perhaps overrate their duration in a state of freedom.

It is probable that the decay of elephants in old age arises from the stiffening of the joints; for four or five tons, constantly borne, is a heavy pressure on the working structure of an animal. This stiffening of the joints in advanced age may also, in part, have given rise to the old fabulous belief, that elephants are incapable of bending their legs, so as to lie down, or even to kneel, for the purpose of repose. In the case of young elephants this is

not true, for they lie down to sleep in the same way as other animals, though probably not quite so often. When they are old they are said not to lie down often, even for the purpose of sleeping ; and instances are mentioned of elephants in India, subjected to labor, which did not lie down for twelve months or more, though they occasionally slept a little on their feet. The wild ones are said to take their occasional repose leaning against the bole of a tree. In confinement, in this country, we believe, they take their repose leaning against the sides of their dens; but an elephant in a den, and exposed to the climate of this country, is so much out of its natural element, that no conclusion drawn from observing it will apply to the race in a state of nature.

The voice of the elephant, as usually heard in a state of confinement, is almost as hollow as the roar of a lion, though it wants the peculiarly offensive roughness of the lion's voice, which grates so harshly upon the ear, and puts one in mind of the rending and mangling of the flesh of animals. But this disagreeable hollow sound is not the only one uttered by the elephant, or even the most common one, where the animal is free and at its ease. The elephant has three voices : one which is shrill, but ends in a murmur, as if the animal were coaxing , one which is deep, but soft and complaining; and one, which is the harsh and hollow roar, which is most frequently heard from the confined animal. The first of these is sportive, and so long as the animal utters it, there is nothing to be feared. The second is complaint, and if the cause of it be found out and removed, it will give place to the first, and there is still no danger ; but the third is indignation or revenge, or both united, and then it is not safe to come near the animal.

As is the case with vegetable feeders, they prefer succulent matters, and especially such as are sweet, or have otherwise an agreeable flavor. In their native forests it is

possible that they do not meet with much food of this kind, but subsist chiefly upon the coarse grasses in the large openings, and the leaves and young branches of shrubs and trees. Thy are social and gregarious animals; and the herds in which they assemble depend, of course, upon the extent and richness of their pastures. The old and young ones associate together without the slightest animosity; and though it is not ascertained that the numbers of the two sexes are equal, or that they live in pairs, yet they are almost invariably led on by the eldest male and the eldest female, which move in advance, and the others appear implicitly to follow their motions. In India, elephants are most abundant in the thick woods on the left bank of the Ganges, along the Brahmapootra, and in the forest of Chittagong, farther to the east. The places of Bengal, in the immediate neighborhood of the forests on the Ganges, are exceedingly rich, and well adapted to the more valuable products of the Indian soil; and, therefore, in them, cultivation is carried closer to the forests than in the less fertile parts of the country. The consequence is, that elephants, though perhaps not so numerous there as in Chittagong, are much more frequently seen. The herds also occasionally invade the cultivated fields, eating vast quantities of green sugar-canes, rice, bannanas, and other crops, and trampling down and destroying the remainder with their feet. They are also very bold and formidable in their invasions; and unless the people can rise in sufficient numbers to drive them off, with torches and cannon shot, they must look on and behold the ruin of their fields, until it shall please the elephants to retire.

The keeping of an elephant is a very expensive matter, the quantity of food required being from one hundred to one hundred and fifty pounds' weight per day. This is, however, the quantity estimated for a full grown elephant in perfect health; and the small and sickly ones, which are generally in this country, do not require so much food.

The young elephant, at its birth, stands about three feet high, and grows nearly a foot more the first year, two-thirds of a foot the second, half a foot the third, five inches the fourth, rather less in the fifth, between three or four inches in the sixth, and two and a half in the seventh. Thus, there is a yearly diminution in their growth, and it is probable that ultimately this growth ceases, though there is every reason to believe that the oldest of both sexes are the largest.

The young begins very early to suck, and while it performs this operation with the mouth, it at the same time presses the teat with the trunk to aid the flow of milk. In a state of nature, the female elephant appears to have very little attachment to her young, less so than most animals; for it is stated that when a female with her young one is captured, two or three days' absence will make her entirely forget it—though the young one itself recognises her, and utters the most plaintive cries, for the purpose of attracting her attention. This fact, which appears to be well authenticated, is pretty strong evidence against the sagacity, affection, and other half-reasoning qualities which fiction has attributed to this animal.

As the pastures of the elephant are perennial, which feel no season of want—and, indeed, such pastures only are adapted to animals requiring so much food—elephants have no rutting season, common, or nearly common, to the whole herd, for young ones are found at all stages of their growth at almost every season of the year. The length of time during which the female elephant suckles her young one, has not been accurately ascertained; and, indeed, from the indifference to it which we have mentioned that she shows, it is highly probable that the period varies much according to circumstances. There seems to be a natural provision for this in the early appearance of milk-teeth in young elephants, which, though small in the first instance, appear to be capable of masticating the softer

vegetables, when the animal is only a few weeks old. This may be a necessary provision in the economy of elephants, because at certain seasons the female may have to range farther and faster for food than her young one is able to follow her, while the place which she leaves may still afford a supply sufficient for the support of her deserted offspring.

Notwithstanding the great size and strength of the elephant, the fury which he evinces when excited, and the perfect safety in which he lives in forests which contain the most bold and ferocious beasts of prey, and the most formidable reptiles, he is no match for man, in even the lowest degree of civilization. The rude man has only to kindle a fire, and the elephant flies in the utmost consternation; or he digs a pit and conceals it with green boughs; the elephant falls into it, and his very weight and strength are the means of his destruction. The elephant is to all appearance safe from the paw of the tiger, the jaws of the alligator, the crushing folds of the python, and the poison of the most deadly serpent; but he has no defence against the wiles of man. The countries which he inhabits, contain, amid the luxuriance with which they are adorned, vegetable poisons of the most mortal character. The rude man has found out by experience how to concentrate these, till they shall speedily curdle the blood, or benumb the frame even of the elephant. So he dips his weapon in the deadly virus, bends his simple bow, sets his arrow on the string, takes his aim with certainty, and in brief space the giant volume of the elephant tumbles lifeless on the earth.

The animal senses of the elephant appear to be all very acute; while he is in health the whole of the skin is sensitive to very trifling causes; and the top of the proboscis has probably as keen a sense as the points of the human fingers. His eye, also, is keen, though the range of his vision is probably not very extensive. Indeed, sight is not

the most useful sense in such places as those which the elephant inhabits; and the senses of animals are in general adapted to the nature of their haunts. The sense of hearing is a much more serviceable one among tall vegetation, than that of sight; and from the size of the elephant's ears, and the freedom with which he can move them backwards and forwards, there is reason to conclude that, in him, this sense is very acute. That the sense of taste is far more keen than in many animals that feed upon vegetables, is proved by the fact of the elephant being so partial to sweet or racy vegetables, and even to sweetmeats. The sense of smell appears, however, to be the leading one, both in enabling the elephant to find that which he seeks, and to avoid that which it is his instinct to shun. Some naturalists have said that the proboscis does not possess this sense, but this appears to be a mistake. Every animal which has a perforated nose, whether that nose be long or short, uses it as an organ of smelling; and no good cause can be shown why the elephant should be an exception to the general rule. From the other functions which this organ performs, it must be very copiously supplied with nerves; and we have direct evidence that the elephant chooses or rejects those articles which are offered to him by means of his proboscis; nor is there any instance mentioned of his having ever attempted to distinguish scent by means of any other part of his body. But the elephant hunters know full well how necessary it is to give the elephant the wind, or approach him on the lee-side only; for if they attempt to come upon him from the windward, he is either off, or so excited and prepared, that he becomes the hunter and they the hunted.

The intelligence usually attributed to the elephant is a different matter. We cannot say positively that the intelligence of any animal is in the ratio of the volume of its brain as compared with that of the whole body, because the functions of the brain are of too obscure and delicate

a nature for being made the foundation of absolute demonstration. Still the degree of animal sagacity, leaving intellect altogether out of the question, bears some relation to the volume of the brain, although we are not able to say that they follow the same numerical proportion, or even to state the law in a numerical series of any kind.

That there should be an increase of the one with an increase of the other, is in perfect accordance with the general analogy of nature, which runs through the whole system of animal life, and forms no small part of the beauty of that system. The power, especially the mechanical power, of a particular organ, such as the clutching of a paw or the turning of a proboscis, is a local matter, and may depend on the extent to which that particular organ is furnished with the energy of life; and ganglions and local nerves may accomplish this in the largest of the mammalia, as well as in the most minute of the insect tribe. But that which we call sagacity does not depend on any thing local, it belongs to the whole system; and, therefore, if we are to refer it anywhere, we might refer it to the brain, or the central mass of the nervous system; at least, if we do not this, we must abandon all analogy, and set at naught the results of all observation; well, if we compare the brain in man with the whole mass of the body (and the human brain can be no more mental, at the same time that it is more material, than the brain of any other animals); and if we make the same comparison in the elephant, we find that in man, when not overloaded with fat (which is not understood to be particularly favorable to sagacity), the volume of the brain is to that of the whole body in the ratio of about 1 to 212. But if we make the same practical comparison in the elephant, we find the brain to the body in the ratio of only about 1 to 500, thus forming a very small part of what it proportionably is in man. In as far as the analogy of nature is concerned, what has been now stated appears to be conclusive

against any high degree of sagacity in the elephant, even as compared with other animals. It is certainly inferior to the dog, and probably also to the pig, an animal which we are not in the habit of rating very high in the scale of intelligence. But the pig may be taught as many tricks as the elephant, though it wants some of the mechanical apparatus for the performance of them; and a pig has been trained to stand and point at game, which no elephant ever did, even under the immediate guidance of its mahaut, with the conducting iron stuck in the top of its head.

We have not made these few remarks with any view to the disparagement of the elephant, but only to correct the vulgar prejudice respecting it, and to elevate it to its true and proper place in the animal kingdom, by doing what we can to reduce the accounts of them within the bounds of sober truth and real usefulness.

When noticing the principal haunts of elephants in the wild state, we omitted to mention, that though they are found in places which have always too much moisture to prevent their being burnt up, and are seldom far from the water, and very often swimming and bathing in it with apparent pleasure; yet they always prefer the clear waters, which have their banks comparatively firm. They sometimes spout muddy water over their bodies with their trunks; but they do not wallow in the mud or walk upon the surfaces of deep and sludgy quagmires. Their weight and the form of their feet are both ill adapted for such places, and they would sink beyond the power of extrication. Neither are their feet suited to rough and stony paths, nor even to those which are very much indurated, as the soles of them are apt to get bruised, and thus the feet of an elephant are the first parts that fail on a long march. Elephants also move but slowly up a hill, evidently on account of their great weight, and although the same weight accelerates their motion down hill, they are

very much shaken and jaded by resisting the downward impulse. Their place of best, or at all events of longest continued motion, is upon level ground.

Such is a summary of the greater part of what is known of the elephant in a state of nature; and it relates wholly, or chiefly, to the Asiatic species, for the African one is hardly known, except as a hunted animal, for his tusks, his flesh, or both—an elephant being a feast of many days to the inhabitants of an African village.

But from the length of time that the elephant has been pressed into the service of man, for purposes of ostentation or for labor, makes him interesting as connected with human history. Our notice of him in this way must be very brief, but it would be incomplete if we did not prepare it by a short account of the manner in which elephants are captured. This we shall take in substance, but in a very abridged form, from the account given by Mr. Corse Scott, and first published in the Asiatic Researches. We shall do this because it is the production of a man of practice, as well as intelligence, drawn up from his own experience as a regular elephant catcher, at a time when these animals were in much demand in India.

Previous to the hunt, some of the most intelligent of the natives, who are conversant with the woods, and experienced in discovering the elephants without alarming them, are sent out to find the herd, and to note particularly the direction in which it is ranging; for as elephants clear the pasture before them almost as completely as reapers, they range on a course for the distance of many miles. When they are discovered, the *keddah* is constructed at a considerable distance in front of them, but in the line of their advance; and all things being thus ready, they proceed to the capture, which is a matter requiring great skill and attention, and by no means unattended with danger. When a herd is discovered, about three hundred people

are employed to surround it, who divide themselves into small parties, consisting generally of three men, each at the distance of about twenty or thirty yards from the other, and form an irregular circle, in which the elephants are enclosed; each party lights a fire and clears a foot-path to the station that is next him, by which a regular communication is soon formed through the whole circumference from one to the other. By this path reinforcements can immediately be brought to any place where an alarm is given; and it is also necessary for the superintendants, who are always going round, to see that the people are alert upon their posts. The first circle being thus formed, the remaining part of the day and night is spent in keeping watch by turns, or in cooking for themselves and companions. Early next morning, one man is detached from each station, to form another circle in that direction where they wish the elephants to advance. When it is finished, the people stationed nearest to the new circle put out their fires and file off to the right and left, to form the advanced party, thus leaving an opening for the herd to advance through, and by this movement both the old and new circle are joined, and form an oblong. The people from behind now begin shouting and making a noise with their rattles, drums, &c., to cause the elephants to advance; and as soon as they are got within the new circle the people close up, take their proper stations, and pass the remaining part of the day and night as before. In the morning the same process is repeated, and in this manner the herd advances slowly in that direction, where they find themselves least incommoded by the noise and clamor of the hunters, feeding as they go along upon branches of trees, &c. If they suspected any snare, they could easily break through the circle; but this inoffensive animal, going merely in quest of food, and not seeing any of the people who surround him, and who are concealed by the thick jungle, advances without suspicion, and

appears only to avoid being troubled with their noise. As fire is the thing elephants seem most afraid of in their wild state, and will seldom venture near it, the hunters always have a number of fires lighted, and particularly at night, to prevent the elephants coming too near, as well as to cook their victuals and keep them warm. The sentinels supply these fires with fuel, especially green bamboos, which are generally at hand, and which by the crackling and loud report they make, together with the noise of the watchmen, deter the elephants from coming near; so that the herd generally remains at a distance near the centre of the circle. Should they at any time advance, the alarm is given, and all the people immediately make a noise and use their rattles, to make them keep at a greater distance. In this manner they are gradually brought to the keddah. As soon as they all have entered the gateway, fires are lighted round the greater part of the enclosure, and particularly at the entries, to prevent the elephants from returning. The hunters from without then make a terrible noise, by shouting, beating of drums, firing blank cartridges, &c., to urge the herd on to the next enclosure. The elephants, finding themselves ensnared, scream and make a noise, but seeing no opening except the entrance to the next enclosure, and which they at first generally avoid, they return to the place through which they lately passed, thinking perhaps to escape, but now find it strongly barricaded; and as there is no ditch at this place, the hunters, to prevent their coming near, keep a line of fire constantly burning all along where the ditch is interrupted, and supply it with fuel from the top of the palisade; and the people from without make a noise, shouting and hallooing to drive them away. Wherever they turn they find themselves opposed by burning fires, or bundles of reeds and dried grass, which are thrust through the opening of the palisades, except towards the entrance of the second enclosure. After traversing the

first enclosure, and finding no chance of escaping but through the gateway into the next enclosure, the leader enters and the rest follow; the gate is instantly shut by people who are stationed on a small scaffold immediately above it and strongly barricaded, fires are lighted, and the same discordant din made and continued till the herd has passed through another gateway into the last enclosure, the gate of which is secured in the same manner as the former was. The elephants being now completely surrounded on all sides, and perceiving no outlet through which they can escape, appear desperate, and in their fury advance frequently to the ditch, in order to break down the palisade, inflating their trunks, screaming louder and shriller than any trumpet, sometimes grumbling like the hollow murmur of distant thunder; but wherever they make an attack, they are opposed by lighted fires, and by the noise and triumphant shouts of the hunters. After finding themselves hemmed in upon all sides, their fury begins to subside, and they are taken and secured one by one, and gradually subdued and brought into the service of man.

It will readily be understood, that in order to repay all the labor and compensate all the risk with which their capture is attended, elephants, when taken and trained to docility, must be of great value; and perhaps we cannot give a more correct estimate, whereby the value of an elephant may be compared with that of other animals employed in draft or carriage, than by stating that a male elephant, full grown, of the largest size, and in the best health and condition, can carry about four tons weight, and travel with it fifty miles in the course of twenty-four hours; and, that if properly used, he may perhaps retain this power for a century or even more; so that he who purchases a good elephant, may be said to purchase an estate for his grandchild. Carrying is not the only useful purpose to which those powerful animals can be applied:

for their weight and strength tell equally in traction; and in this respect their strength tells much more in proportion to the strength of horses or bullocks than it does in carrying. In using a team of horses, the proportional expense increases, and that at a rapid rate, in proportion to the number used. The reason of this is obvious: the horses cannot by possibility pull exactly together, however nicely they may be matched in point of size and strength. This will hold good in the case of two, and much more in the case of a greater number; so that the greater the number in every horse team, the greater the expense of every pound weight that team pulls along. This is a disadvantage in the employment of combinations of small animals of which no ingenuity and skill can get the better; and though it is not very apparent in countries which are intersected in every direction by roads planned on the most scientific principles and executed and kept in repair in the best manner (which might be, if it is not, the case in England); yet if we are to suppose a country where such roads cannot be generally made or maintained, then we can understand something of the value of such an animal as the elephant.

There was a time when most of the merchandise and produce which was carried inland in England, had to be carried on pack horses; and then if the distance was a hundred miles, or even fifty, the price of the carriage was nearly equal to that of the common produce of the earth; and thus, the several districts of the country were cut off from each other; and it was no uncommon occurrence for the people of one district to be dying of famine, while there was an abundant surplus in another district, but no means of bringing that surplus to the needy, of which the expense could at all be borne.

Many instances of this kindliness of temper have been related by persons of veracity, who are familiar with the

habits of the elephant in his native wilds. We owe the following to Mr. Pringle.

A few days after the arrival of this gentleman at Enon, a troop came down one dark and rainy night, close to the outskirts of the village; the missionaries heard them bellowing and making an extraordinary noise at the upper end of their orchard, but knowing well how dangerous it is to encounter these powerful animals in the night, they kept close within their houses till daylight. Next morning, on examining the spot where they had heard the elephants, they discovered the cause of this nocturnal uproar. One of the party had fallen into an unfinished ditch or trench, about five or six feet in width, and nearly fourteen in depth, which the industrious missionaries had recently cut through the bank of the river, on purpose to lead out the water to irrigate some part of their garden-ground, and to drive a corn-mill. The disaster was evident, for the marks of his feet were distinctly visible at the bottom, as well as the impress of his huge body on the sides. How he had got in might be easily conjectured, but how, being once there, he had ever contrived to get out again, was the marvel. By his own unaided efforts, it was obviously impossible. Could his comrades then, have assisted him? No doubt they had; though by what means, unless by hauling him out with their trunks, it is impossible to say. On examining the spot, it was evident that such had been the case. Mr. Pringle found the edges of the trench deeply indented with numerous vestiges, as if the other elephants had stationed themselves on either side, some kneeling, others on their feet, and had thus, by united efforts, and probably after many failures, hoisted their unlucky brother out of the pit.

We owe also to the same accurate observer the following characteristic and affecting anecdote.

A band of hunters had surprised a male and female ele-

phant in an open spot, near the skirts of a thick and thorny jungle. The animals fled towards the thicket, and the male, notwithstanding the many balls that struck him ineffectually, was soon safe from the reach of the pursuers; but the female being sorely wounded, was unable to escape with the same alacrity, and the hunters cutting off her retreat, were preparing speedily to kill her, when all at once, the male rushed forth with the utmost fury from his hiding place, and with a shrill and frightful scream, like the loud sound of a trumpet, charged down upon the huntsmen. So terrific was his aspect, that all instinctively sprang to their horses and fled for life; all but Cobus Klopper, (we think that was his name,) the last who had fired upon the wounded elephant, and who was standing with his horse's bridle over his arm, reloading his huge gun at the moment the infuriated animal burst from the wood. This unfortunate man the elephant immediately singled out, and before he could spring into his saddle, the creature was upon him. One blow from his proboscis struck poor Cobus to the earth, and without troubling himself about the horse, who galloped off in terror, he thrust his gigantic tusks through the man's body, and then, after stamping it flat with his ponderous feet, again seized it with his trunk, and flung it high into the air. Having thus wreaked vengeance upon his foe, he walked gently up to his consort, and affectionately caressing her, supported her wounded side with his shoulder, and regardless of the volleys with which the hunters (who had again rallied to the conflict,) assailed them, he succeeded in conveying her from their reach into the impenetrable recesses of the forest.

Major Smith also relates an interesting anecdote of a female elephant, whose character he had frequent opportunities of studying. This animal had a great affection for a dog, and the spectators, to tease her, used to pull the dog's ears and make him yelp: on one occasion, when this cruel joke was going on at the side of the barn within

which the elephant was kept, she no sooner heard the voice of her friend in distress, than she began to feel the separating boards, and giving one blow, appeared surprised that they did not fall; she then struck with greater force, made the boards fly in splinters, and looked through with such menacing gestures, that the unfeeling people thought proper to make off.

Another incident is related of this animal. She was crossing a river in a passage-boat, when some men, to tease her, took the dog into a boat that was towed alongside, and began to pull its ears; the elephant, resenting the ill usage of her friend, filled her proboscis with water and squirted it upon the men; but finding they would not desist, she set in good earnest to suck up water and discharge it into the boat. At first the men laughed at the expedient, but she persevered till they began to bale, to keep from sinking; upon this she redoubled her efforts, and would certainly have swamped the boat, had the passage across been prolonged a few minutes.

Surely it is no small proof of the benevolence of the Creator thus to assign to the lower orders of creation a portion of that faculty which he has so abundantly bestowed upon man. But then observe the difference; this faculty in man is capable of great attainments, it elevates him to a dignity little lower than the angels, and we have a lively hope, that though it doth not yet appear what the christian will hereafter be, glorious things, even in this respect, are laid up for him. But in the animal creation, it is a restricted gift, bringing with it no reciprocity of obligation. Happy and enviable is the condition of these poor creatures, even if subjected to harshness and neglect, when compared with the awful state of those, who while they boast the dangerous pre-eminence, forget or disregard the obligation it imposes.

RHINOCEROS.

RHINOCEROS.

Rhinoceros Indicus, (of India,) Rhinoceros Africanus, (of Africa.)

PLATE XIV.—THE RHINOCEROS.

Next to the elephant, the rhinoceros is the most powerful of animals. He is usually found about twelve feet long, from the tip of the nose to the insertion of the tail; from six to seven feet high; and the circumference of his body is nearly equal to his length. He is, therefore, equal to the elephant in bulk: although in appearance much smaller to the eye, the reason is, that his legs are much shorter. Words can convey but a very confused idea of this animal's shape; and yet there are few so remarkably formed: its head is furnished with a horn, growing from the snout, sometimes three feet and a half long; and but for this, that part would have the appearance of the head of a hog; the upper lip, however, is much longer in proportion, ends in a point, is very pliable, serves to collect its food, and deliver it into the mouth: the ears are large, erect, and pointed; the eyes are small and piercing; the skin is naked, rough, knotty, and lying upon the body in folds, after a very peculiar fashion: there are two folds very remarkable; one above the shoulders, and another over the rump; the skin, which is of a dirty brown color, is so thick as to turn the edge of a scimitar, or to resist a musket-ball; the belly hangs low; the legs are short, strong, and thick, and the hoofs divided into three parts, each pointing forward.

Such is the general outline of an animal that appears chiefly formidable from the horn growing from its snout; and formed rather for war, than with a propensity to engage. This horn is sometimes found from three to three feet and a half long, growing from the solid bone, and so

disposed as to be managed to the greatest advantage. It is composed of the most solid substance; and pointed so as to inflict the most fatal wounds. The elephant, the boar, or the buffalo, are obliged to strike transversely with their weapons; but the rhinoceros employs all his force with every blow; so that the tiger will more willingly attack any other animal of the forest, than one whose strength is so justly employed. Indeed, there is no force which this terrible animal has to apprehend: defended, on every side, by a thick horny hide, which the claws of the lion or the tiger are unable to pierce, and armed before with a weapon that even the elephant does not choose to oppose. The missionaries assure us, that the elephant is often found dead in the forests, pierced with a horn of a rhinoceros. The combat between these two, the most formidable animals of the forest, must be very dreadful. Emanuel, king of Portugal, willing to try their strength, actually opposed them to each other; and the elephant was defeated.

Although the rhinoceros is thus formidable by nature, yet imagination has not failed to exert itself, in adding to its terrors. The scent is most exquisite; and it is affirmed that it consorts with the tiger. It is reported also, that when it has overturned a man, or any other animal, it continues to lick the flesh quite from the bone with its tongue, which is said to be extremely rough. All this, however, is fabulous; the scent, if we may judge from the expansion of the olfactory nerves, is not greater than that of a hog, which we know to be indifferent; it keeps company with the tiger, only because they both frequent watery places in the burning climates where they are bred; and as to its rough tongue, that is so far from the truth, that no animal of near its size has so soft a one. "I have often felt it myself," says Ladvocat, in his description of this animal; "it is smooth, soft, and small, like that of a dog; and to the feel it appears as if one passed the hand over velvet."

The rhinoceros which was shown at London in 1739, and described by Dr. Parsons, had been sent from Bengal. Though it was very young, not being above two years' old, yet the charge of his carriage and food from India cost near a thousand pounds. It was fed with rice, sugar, and hay: it was daily supplied with seven pounds of rice, mixed with three of sugar, divided into three portions; it was given great quantities of hay and grass, which it chiefly preferred; its drink was water, which it took in great quantities. It was of a gentle disposition, and permitted itself to be touched and handled by all visiters, never attempting mischief, except when abused, or when hungry; in such a case, there was no method of appeasing its fury, but by giving it something to eat. When angry, it would jump up against the walls of its room with great violence, and made many efforts to escape, but seldom attempted to attack its keeper, and was always submissive to his threats. It had a peculiar cry, somewhat a mixture between the grunting of a hog and the bellowing of a calf.

The age of these animals is not well known; it is said by some, that they bring forth at three years old, and if we may reason from analogy, it is probable they seldom live above twenty. That which was shown in London, was said by its keeper to be eighteen years old, and even at that age he pretended to consider it as a young one; however, it died shortly after, and that probably in the course of nature.

The rhinoceros is a native of the deserts of Asia and Africa, and is usually found in those extensive forests that are frequented by the elephant and the lion. As it subsists entirely upon vegetable food, it is peaceful and harmless among its fellows of the brute creation; but, though it never provokes to combat, it equally disdains to fly. It is every way fitted for war, but rests content in the consciousness of its security. It is particularly fond of the prickly branches of trees, and is seen to feed upon such thorny

shrubs as would be dangerous to other animals, either to gather or to swallow. The prickly points of these, however, may only serve to give a poignant relish to this animal's palate, and may answer the same grateful ends in seasoning its banquet that spices do in heightening ours.

In some parts of the kingdom of Asia, where the natives are more desirous of appearing warlike than showing themselves brave, these animals are tamed, and led into the field to strike terror into the enemy; but they are always an unmanageable and restive animal, and probably more dangerous to the employers than those whom they are brought to oppose.

The method of taking them, is chiefly by watching them, till they are found either in some moist or marshy place, where, like hogs they are fond of sleeping and wallowing. They then destroy the old one with fire arms; for no weapons that are thrown by the force of man are capable of entering this animal's hide. If, when the old one is destroyed, there happens to be a cub, they seize and tame it: these animals are sometimes taken in pit-falls, covered with green branches, laid in those paths which the rhinoceros makes in going from the forest to the river side.

There are some varieties in this animal, as in most others; some of them are found in Africa with a double horn, one growing above the other. This weapon, if considered in itself, is one of the strongest and most dangerous that nature furnishes to any part of the animal creation. The horn is entirely solid, formed of the hardest bony substance, growing from the upper maxillary bone, by so strong an apophyse, as seemingly to make but one part with it. Many are the medicinal virtues that are ascribed to this horn, when taken in powder; but these qualities have been attributed to it without any real foundation, and make only a small part of the many fables which this extraordinary animal has given rise to.

LEICESTER RAM.

BLACK FACED RAM.

SHEEP.

PLATE XV.—THE SHEEP.

Those animals that take refuge under the protection of man, in a few generations become indolent and helpless. Having lost the habit of self-defence, they seem to lose also the instincts of nature. The sheep, in its present domestic state, is, of all animals, the most defenceless and inoffensive. With its liberty, it seems to have been deprived of its swiftness and cunning; and what in the ass might rather be called patience, in the sheep appears to be stupidity. With no one quality to fit it for self-preservation, it makes vain efforts at all. Without swiftness, it endeavors to fly; and without strength, sometimes offers to oppose. But these feeble attempts rather incite than repress the insults of every enemy; and the dog follows the flock with greater delight upon seeing them fly, and attacks them with more fierceness upon their unsupported attempts at resistance. Indeed, they run together in flocks rather with the hopes of losing their single danger in the crowd, than of uniting to repress the attack by numbers. The sheep, therefore, were it exposed in its present state to struggle with its natural enemies of the forest, would soon be extirpated. Loaded with a heavy fleece, deprived of the defence of its horns, and rendered heavy, slow, and feeble, it can have no other safety than what it finds from man. This animal is now, therefore, obliged to rely solely upon that art for protection, to which it originally owes its degradation.

But we are not to impute to nature the formation of an animal so utterly unprovided against its enemies, and so unfit for defence. The moufflon, which is the sheep in a savage state, is a bold, fleet creature, able to escape from the greater animals by its swiftness, or to oppose the

smaller kinds with the arms it has received from nature. It is by human art alone that the sheep has become the tardy, defenceless creature we find it. Every race of quadrupeds might easily be corrupted by the same allurements by which the sheep has been thus debilitated and depressed. While undisturbed, and properly supplied, none are found to set any bounds to their appetite. They all pursue their food while able, and continue to graze, till they often die of disorders occasioned by too much fatness. But it is very different with them in a state of nature: they are in the forest surrounded by dangers, and alarmed with unceasing hostilities; they are pursued every hour from one tract of country to another; and spend a great part of their time in attempts to avoid their enemies. Thus constantly exercised, and continually practising all the arts of defence and escape, the animal at once preserves its life and native independence, together with its swiftness, and the slender agility of its form.

The sheep, in its servile state, seems to be divested of all inclinations of its own; and of all animals it appears the most stupid. Every quadruped has a peculiar turn of countenance, a physiognomy, if we may so call it, that generally marks its nature. The sheep seems to have none of those traits that betoken either courage or cunning; its large eyes, separated from each other, its ears sticking out on each side, and its narrow nostrils, all testify the extreme simplicity of this creature; and the position of its horns, also, show that nature designed the sheep rather for flight than combat. It appears a large mass of flesh, supported upon four small straight legs, ill fitted for carrying such a burden; its motions are awkward, it is easily fatigued, and often sinks under the weight of its own corpulency. In proportion as these marks of human transformation are more numerous, the animal becomes more helpless and stupid. Those which live upon a more fertile pasture, and grow fat, become entirely feeble; those

that want horns are found more dull and heavy than the rest; those whose fleeces are longest and finest are most subject to a variety of disorders; and, in short, whatever changes have been wrought in this animal by the industry of man, are entirely calculated for human advantage, and not for that of the creature itself. It might require a succession of ages before the sheep could be restored to its primitive state of activity, so as to become a match for its pursuers of the forest.

The goat, which it resembles in so many other respects, is much its superior. The one has its particular attachment, sees danger, and generally contrives to escape from it; but the other is timid without a cause, and secure when real danger approaches. Nor is the sheep, when bred up tame in the house, and familiarized with its keepers, less obstinately absurd; from being dull and timid, it then acquires a degree of pert familiarity; butts with its head, becomes mischievous, and shows itself every way unworthy of being singled out from the rest of the flock. Thus it seems rather formed for slavery than friendship; and framed more for the necessities than the amusements of mankind. There is but one instance in which the sheep shows any attachment to its keeper; and that is seen in those countries which are thinly settled, but not in England or America. What I allude to is, their following the sound of the shepherd's pipe. Before I had seen them trained in this manner, I had no conception of those descriptions in the old pastoral poets, of the shepherd leading his flock from one country to another. As I had been used only to see these harmless creatures driven before their keepers, I supposed that all the rest was but invention; but in many parts of the Alps, and even some provinces of France, the shepherd and his pipe are still continued with true antique simplicity. The flock is regularly penned every evening, to preserve them from the wolf; and

the shepherd returns homeward at sunset with his sheep following him, and seemingly pleased with the sound of the pipe, which is blown with a reed, and resembles the chanter of a bagpipe. In this manner, in those countries that still continue poor, the Arcadian life is preserved in all its former purity; but in countries where a greater inequality of condition prevails, the shepherd is generally some poor wretch, who attends a flock from which he is to derive no benefits, and only guards those luxuries which he is not fated to share.

It does not appear, from early writers, that the sheep was bred in England, and it was not till several ages after this animal was cultivated, that the woollen manufacture was established. That valuable branch of business lay for a considerable time in foreign hands; and we were obliged to import the cloth manufactured from our own materials. There were, notwithstanding, many unavailing efforts among the kings of Europe, to introduce and preserve the manufacture at home. Henry the Second, by a patent granted to the weavers in London, directed, that if any cloth was found made of a mixture of Spanish wool, it should be burned by the mayor. Such edicts at length, although but slowly, operated towards the establishing this trade among us. The Flemings, who at the revival of arts possessed the art of cloth-working in a superior degree, were invited to settle here; and soon after foreign cloth was prohibited from being worn in England. In the times of Queen Elizabeth, this manufacture received every encouragement; and many of the inhabitants of the Netherlands being then forced, by the tyranny of Spain, to take refuge in this country, they improved us in those arts, in which we at present excel the rest of the world. Every art, however, has its rise, its meridian, and its decline; and it is supposed by many, that the woollen manufacture has, for some time, been decaying amongst us. The

cloth now made is thought to be much worse than that of some years past; being neither so firm, nor fine; neither so much courted abroad, nor so serviceable at home.

No country, however, produces such sheep as England; either with larger fleeces, or better adapted for the business of clothing. Those of Spain, indeed, are finer, and we generally require some of their wool to work up with our own: but the weight of a Spanish fleece is no way comparable to one of Lincoln or Warwickshire; and, in those countries, it is no uncommon thing to give fifty guineas for a ram.

The sheep without horns are counted the best sort, because a great part of the animal's nourishment is supposed to go into the horns. Sheep, like other ruminant animals, want the upper fore-teeth; but have eight in the lower jaw: two of these drop, and are replaced at two years old; four of them are replaced at three years old; and all at four. The new teeth are easily known from the rest, by their freshness and whiteness. There are some breeds, however, in England, that never change their teeth at all; these the shepherds call the *leather-mouthed cattle;* and, as their teeth are thus long wearing, they are generally supposed to grow old a year or two before the rest. The sheep brings forth one or two at a time; and sometimes three or four. The first lamb of a ewe is generally pot-bellied, short and thick, and of less value than those of a second or third production; the third being supposed the best of all. They bear their young five months; and, by being housed, they bring forth at any time of the year.

But this animal, in its domestic state, is too well known to require a detail of its peculiar habits, or of the arts which have been used to improve the breed. Indeed, in the eye of an observer of nature, every art which tends to render the creature more helpless and useless to itself, may

be considered rather as an injury than an improvement; and if we are to look for this animal in its noblest state, we must seek for it in the African desert, or the extensive plains of Siberia. Among the degenerate descendants of the wild sheep, there have been so many changes wrought, as entirely to disguise the kind, and often to mislead the observer. The variety is so great, that scarcely any two countries have their sheep of the same kind; but there is found a manifest difference in all, either in the size, the covering, the shape, or the horns.

The woolly sheep, as it is seen among us, is found only in Europe, and some of the temperate provinces of Asia. When transported into warmer countries, either into Florida or Guinea, it loses its wool, and assumes a covering fitted to the climate, becoming hairy and rough; it there also loses its fertility, and its flesh no longer has the same flavor. In the same manner, in the very cold countries, it seems equally helpless and a stranger; it still requires the unceasing attention of mankind for its preservation; and although it is found to subsist, as well in Greenland as in Guinea, yet it seems a natural inhabitant of neither.

Of the domestic kinds to be found in the different parts of the world, besides our own, which is common in Europe, the first variety is to be seen in Iceland, Muscovy, and the coldest climates of the north. This, which may be called the Iceland sheep, resembles our breed in the form of the body and the tail; but differs in a very extraordinary manner in the number of the horns; being generally found to have four, and sometimes even eight, growing from different parts of the forehead. These are large and formidable; and the animal seems thus fitted by nature for a state of war; however, it is of the nature of the rest of its kind, being mild, gentle, and timid. Its wool is very different also from that of the common sheep, being long, smooth, and hairy. Its color is of a dark

brown; and under its outward coat of hair it has an internal covering, that rather resembles fur than wool, being fine, short, and soft.

The second variety to be found in this animal, is that of the broad-tailed sheep, so common in Tartary, Arabia, Persia, Barbary, Syria, and Egypt. This sheep is only remarkable for its large and heavy tail, which is often found to weigh from twenty to thirty pounds. It sometimes grows a foot broad, and is obliged to be supported by a small kind of board, that goes upon wheels. This tail is not covered underneath with wool, like the upper part, but is bare; and the natives, who consider it as a very great delicacy, are very careful in attending and preserving it from injury. Mr. Buffon supposes that the fat which falls into the caul in our sheep, goes in these to furnish the tail; and that the rest of the body is from thence deprived of fat in proportion. With regard to their fleeces, in the temperate climates, they are, as in our own breed, soft and woolly; but in the warmer latitudes, they are hairy: yet in both they preserve the enormous size of their tails.

The third observable variety is that of the sheep called *strepsicheros*. This animal is a native of the islands of the Archipelago, and only differs from our sheep, in having straight horns, surrounded with a spiral furrow.

The last variety is that of the Guinea sheep, which is generally found in all the tropical climates, both of Africa and the East Indies. They are of a large size, with a rough hairy skin, short horns, and ears hanging down, with a kind of dewlap under the chin. They differ greatly in form from the rest, and might be considered as animals of another kind, were they not known to breed with our sheep. These, of all the domestic kinds, seem to approach the nearest to the state of nature. They are larger, stronger, and swifter, than the common race: and, consequently, better fitted for a precarious forest life. However,

they seem to rely, like the rest, on man for support; being entirely of a domestic nature, and subsisting only in the warmer climates.

Such are the varieties of this animal, which have been reduced into a state of domestic servitude. These are all capable of producing among each other; all the peculiarities of their form have been made by climate and human cultivation; and none of them seem sufficiently independent to live in a state of savage nature. They are, therefore, to be considered as a degenerate race, formed by the hand of man, and propagated merely for his benefit. At the same time, while man thus cultivates the domestic kinds, he drives away and destroys the savage race, which are less beneficial, and more headstrong. These, therefore, are to be found in but a very small number, in the most uncultivated countries, where they have been able to subsist by their native swiftness and strength. It is in the more uncultivated parts of Greece, Sardinia, Corsica, and particularly in the deserts of Tartary, that the *moufflon* is to be found, that bears all the marks of being the primitive race; and that has been actually known to breed with the domestic animal.

The *moufflon*, or *musmon*, though covered with hair, bears a stronger similitude to the ram, than to any other animal: like the ram, it has the eyes placed near the horns; and its ears are shorter than those of the goat; it also resembles the ram in its horns, and in all the particular contours of its form. The horns also are alike; they are of a yellow color, and have three sides, as in the ram, and bend backwards in the same manner behind the ears; the muzzle and the inside of the ears, are of a whitish color, tinctured with yellow; the other parts of the face are of a brownish gray. The general color of the hair over the body is of a brown, approaching to that of the red deer. The inside of the thighs and the belly are of a white, tinctured with yellow. The form, upon the whole,

seems more made for agility and strength than that of the common sheep; and the moufflon is actually found to live in a savage state, and maintain itself, either by force or swiftness, against all the animals that live by rapine. Such is its extreme speed, that many have been inclined rather to rank it among the deer kind, than the sheep. But in this they are deceived, as the musmon has a mark that entirely distinguishes it from that species, being known never to shed its horns. In some, these are seen to grow to a surprising size; many of them measuring, in their convolutions, above two ells long. They are of a yellow color, as was said; but the older the animal grows, the darker the horns become: with these they often maintain very furious battles between each other; and sometimes they are found broken off in such a manner, that the small animals of the forest creep into the cavity for shelter. When the musmon is seen standing on the plain, his fore-legs are always straight, while his hinder legs seem bent under him; but in cases of more active necessity, this seeming deformity is removed, and he moves with great swiftness and agility. The female very much resembles the male of this species, but that she is less, and her horns also are never seen to grow to that prodigious size they are of in the wild ram. Such is the sheep in its savage state; a bold, noble, and beautiful animal: but it is not the most beautiful creatures that are always found most useful to man. Human industry has therefore destroyed its grace, to improve its utility.

INDIAN PHEASANT.

PLATE XVI.—THE INDIAN PHEASANT.

Feathers of the neck linear, elongate, spotted with white, black and fulvous, tips membranaceous; throat, breast, belly, back, and wing-coverts griseous, lineated with white; quills of tail and wings black. *Wild Cock.*

This magnificent species of pheasant, commonly named the jungle cock, is a native of India, where it occurs in great plenty in woods and forests.

It is generally admitted to be the stock from whence all our domestic fowls have originated; but as this opinion is no where supported by evidence, and as change of climate has not been proved to cause such material differences as are found between this species and the numerous domestic varieties, I cannot but dissent from the generally received opinion.

ALLIGATOR.

PLATE XVII.—THE ALLIGATOR.

The alligator is a genus of aquatic Saurian reptiles, of large size, formidable structure, and voracious habits. There is not much difference between the crocodiles of the eastern world and the alligators of the western, neither is there much difference in the signification of the two names. The crocodile was named by the Greeks after a yellow lizard, the exact species is not known, from the feet of which there exuded a liquor of a musky scent; and the alligator is only a corruption of the Portuguese words for lizard, and was by them applied to the crocodiles of west-

PLATE 17.

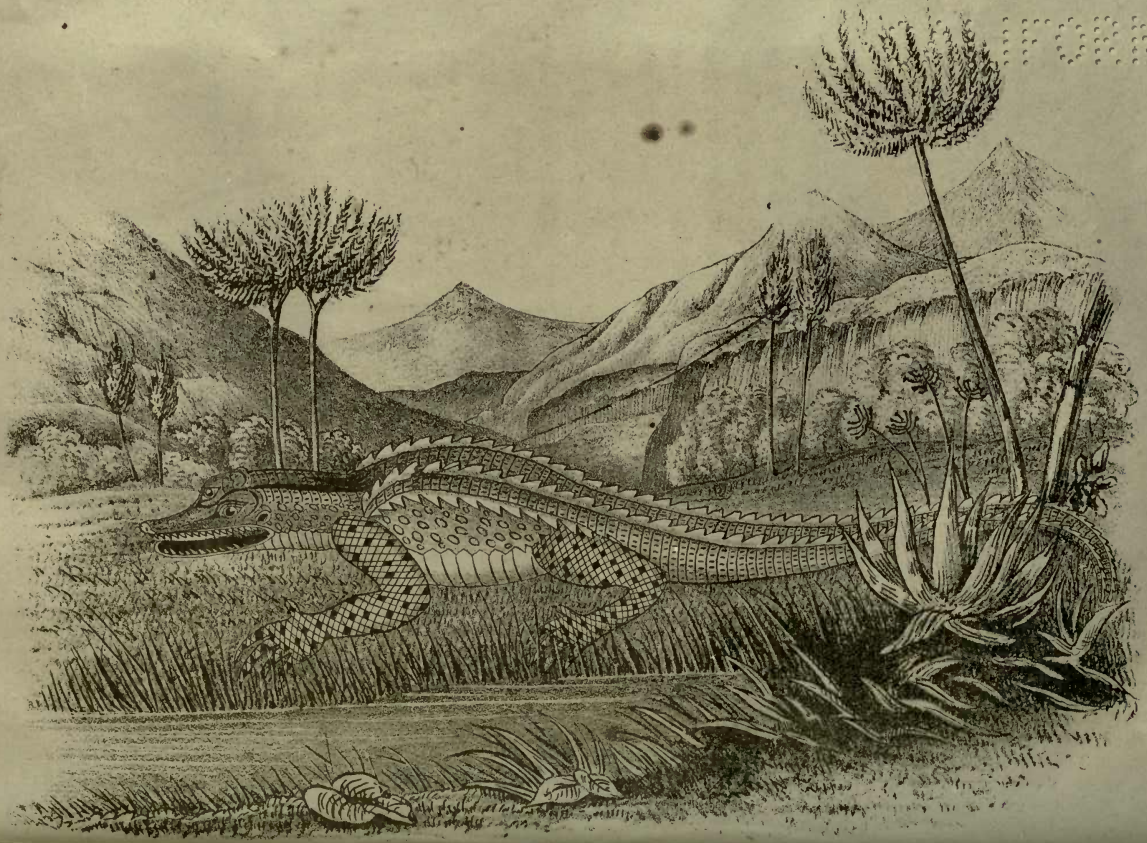


PLATE 16.

PHEASANT.

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ern Africa, before the American species had been discovered.

Alligators are, as one would say, ungainly, and even ugly animals; but they are not naturally ferocious; they kill only to eat, and they kill but one at a time. If indeed the prey is so tough that they cannot break it by the pressure of their jaws, they take it under water, and bury it there till it becomes softened by partial putrefaction. In these cases, the same unquenched hunger sends them to look for more; and they continue the process till they can meet with something which can be eaten instanter. No reptiles masticate or grind their food; and few, if any, give it a second bite. Their jaws close like the sides of a spring-trap; and if they do not enclose the whole of the prey, the only way that the animal has of detaching the portion which they do seize, in order to swallow it, is by shaking it; and when they are unable to accomplish this, they bury it under water in the manner which has been stated.

Animals, when swallowed whole, or nearly so, take of course longer in digesting than when they are torn or chewed; and thus the alligators are, like the larger swallowing serpents, dull and languid for some time after a full meal.

At all times, indeed, they are indolent animals; for though they can walk tolerably fast, and swim faster, the greater part of their time is spent in inaction, and some of it, in the colder climates, in a torpid or dormant state.

In climates where they hybernate, they dig for themselves hybernating dens with the entrance under the water, but the chamber so high as that the water does not reach it. It does not appear that any animal which breathes free air by means of lungs, has been known to hybernate under water. There is some doubt, in the case of the frogs of cold countries; but the analogy is against it, and there is no direct proof to rebut the analogy. Upon

the confines, however, the lungs of some of the aquatic reptiles, and the gill cells of some of the cartilaginous fishes, have so near a resemblance to each other, that the line of distinction, though there is no doubt of its existence, is a nice point to determine. It is worthy of remark, too, that the reptiles and the fishes alluded to are both tenacious of life in proportion to the sluggish action of their system; and there is also something curious in the growth of their bones.

During the heat of the day, the alligators either lie stretched and languid on the banks, or in the mud, on the shores of the rivers and lagunes, which are the favorite haunts of the animals; and as the other natives of such localities (the winged ones which sport in the sun excepted) are generally at rest at these times, the consequence is, that during the day, they capture but few animals, excepting such as wander near them. They sometimes, however, are put into motion and noise in the heat and drought, by that singular wave called the "bore," which is known in some of the fen rivers of England, and which is often very high and violent in its motion in the level-bedded rivers of warmer climates. Heavy and strong as the full-grown alligators are, the force of the bore rolls them powerless before it; and they rattle against each other, and bellow, adding much to the noise and confusion. There is no bore in the bays or lagunes, and none in rivers above the first rapid, even though that is an inconsiderable one; and thus, during the hot and sunny days, the alligators in these are at peace. When evening comes, however, they begin to move, and the roaring of the larger ones is terrific. It is a compound of the sounds of the bull and the bittern, but far louder than either; and it grates and shivers on the ear as if the ground were shaking. Whether it produces any effect upon the prey of the alligators, in making that prey disclose itself by its efforts to escape, is not known; and, indeed, harsh and

terrific as it is, it seems not only to be the common noise of the reptiles, but also their love song, which they emit frequently and freely in the pairing season. The history of the pairing is not very complete; but there are some reasons for concluding that they are polygamous. The males engage in fierce though uncouth battles at that season, and not, as has been observed, at any other; and the fair inference is that these are battles of gallantry. They usually take place in the water, though in the shallows rather than the depths; and, at first at least, they are bouts of cudgel-play, rather than battles with the teeth. When it comes to the latter, it is desperate, and the death of one, sometimes of both, is inevitable. It has already been said, that the alligator can give no second bite; and as little is it disposed to leave the first one, till the object which it seizes is fairly under water. The jaws close in the same manner as those of the "biting turtles," and they can with difficulty be wrenched asunder, even by a lever of considerable length.

As the case is with all the larger reptiles which find their food chiefly in the water, the alligators are oviparous; and the females deposite their eggs in holes of the banks, above the water mark, which they excavate with their paws and snout, and cover again after the eggs are deposited. Though the animal is sometimes very large, fifteen, twenty, or even thirty feet in length, and in the latter case little less than two feet in diameter where thickest, the eggs are not larger than those of a goose, and indeed generally not so large. They are eatable, as also is the flesh of the animals; but the flavor of both is rather musky for delicate palates. As to the number of eggs which the female drops, authors are not agreed; some say as many as a hundred, and others little more than a fourth part of that number. Both are, probably, in so far right; for as the female returns to the water every day, it is probable that she deposites part only in one hole. During that ope-

ration they are not voracious; and perhaps they, like the turtle, abstain in great part from eating at that time. Their grand feasts are during the floods, especially the first of them, whether from the southern rains, or the melting of the snows at the sources of more northerly rivers, such as the Mississippi. These rains by their violence beat down many animals, and sweep away many animal remains, wafting them all to those temporary lakes in the forests, in which the water stagnates with its floatage. Recent or putrid mammalia, birds, reptiles, or fish, (for some of the latter are killed, and many lose their management,) are all the same to the alligators. Mountain cat, monkey, vulture, parrot, snake, lizard, fish, (the gymnotus itself,) or even the deadly bushmaster, all find jaws ready to seize them; and while the harvest lasts, which may be about eight or ten weeks in the average of places, the reptiles grow fat, and are able to undergo the labors of the year with little food, as has been said.

There is not a doubt that these large and powerful reptiles, whether alligators, as so called, crocodiles, or gavials, perform an important part in nature's economy by so doing. In spite of all that they take, and they are neither few nor indolent at that time, (for in them as in other creatures the time of activity and of appetite is the same,) there remains enough to putrify and steam up with the returning heat, so as to render the atmosphere abundantly pestilent to all who have the hardihood to encounter it. But if they did not do their work, and if the larger grallidæ and the vultures did not come after as soon as there is provision for them, the banks of the rivers could not be approached within many miles, unless by those who sought to die there.

We mention those scenes and circumstances, not for the sake of those whose taste in natural science goes after "an alligator stuffed;" but who would rather know something of the haunts of the alligator, and of what that very pow-

erful and very peculiar animal does there. And it is for a similar reason, rather than for any urgent systematic necessity there is for it, that we have resolved to divide the family, or perhaps, systematically speaking, the genus, into the three popular sections of alligators, crocodiles, and gavials. By this means we shall be able to render each group an index to a certain portion of the work, equally interesting and peculiar in all its characters.

The most remarkable distinguishing character of each of these groups is the shape of the head. The gavials have it the most produced, the crocodiles the next, and the alligators have it shortest. In them the length of the jaws from the articulation is only one half more than the greatest breadth. The teeth have a ragged appearance, as some of them are long and others short. There are never fewer than nineteen in each side of either jaw, and sometimes two more in each side of the under one. These grow with the growth of the animal; and receiving cavities are formed for them in the upper jaw, especially from those fourth from the front, which are longer than any of the others. The body is low and flattish; the hind legs are nearly round in their section, and have no membrane on the sides; the webs of the toes also extend only half the length; and the holes behind the orbits, which are understood to secrete a musky fluid in the crocodiles, are small and obscure, or wanting.

From the structure of the feet, and the want of fringed or pectinated membranes on the hind legs, which are both a lessening of the pelagic structure, alligators keep more to the fresh waters, the rivers and lagunes, than the crocodiles; so that those in the bays of the West India islands, though popularly known as alligators or *caymans*, are rather to be considered as crocodiles, even in the popular sense of that term.

There are four specimens or more, all natives of the warmer parts of the American continent; but varying in

their appearance, so as in some of the species to resemble the crocodiles, and in others the gavials.

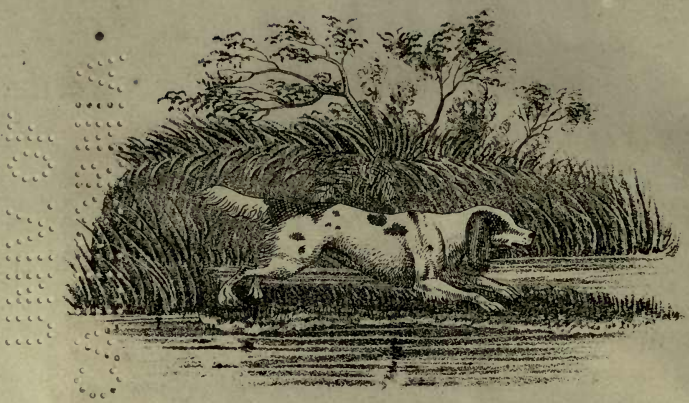
The species which, in the written accounts at least, is the most ferocious and formidable to man, is that which inhabits the Mississippi and the other rivers of the southern parts of North America, and the swamps and lagunes which these rivers form when they are swollen by floods. It is the pike-headed alligator (*Alligator lucius*) of Cuvier, so called because its head, in shape at least, bears some resemblance to that of the common pike. This species has been seen as long as fifteen feet; with the head two feet long, and the gape nearly the same. The jaws are more elongated than in some other species, the breadth at the articulation not being in those of the size mentioned much more than one foot. The snout is flattened on the upper surface, and slightly turned up at the extremity, which is bluntly pointed; but the sides of the jaws are, for the greater portion of the length of the gape, nearly parallel. The teeth are large and irregular, with the fourth from the front in each side of the under jaw much larger than the rest, so that they can penetrate through a substance of considerable thickness, and, with their points received into the sockets in the upper jaw, hold on against a very considerable strain. It is by this means that the animal is said to master the larger mammalia, when they come to the shores to quench their thirst. The alligator, having observed its prey, swims slowly toward it, with the snout barely above the water. When within reach, it seizes the upper lip and nose; and at the same time incurvating its body with more than ordinary exertion, hits a violent blow on the shoulder with its thick and scaly tail. The bite and the blow together bring the animal to its knees, tumble it headlong and helpless; and as the alligator does not quit its hold while the animal continues to struggle, and also contrives to keep the head under water, the prey soon expires of pain and suffocation. The smaller

mammalia are generally foundered by the blow of the tail, and then seized by the head and drawn under water till they are suffocated. But in what state soever prey of this description is eaten, whether recent or after it has been partially decomposed by time, it is always eaten on land. They do not feed under water, any more than they breathe in that situation; but while in the water, they often contrive to feed in the air. They do so both upon birds and fishes. The low-flying ones of the former, they sometimes catch as they skim the surface on the wing; and they get under the swimmers, jerk them clear of the water with the snout, and instantly seize and swallow them. When it preys on fishes, it gets below them and endeavors to jerk them out of the water in a similar manner, in which case it swallows them at once; but if it seize them under water, it rises to the surface, tosses them into the air, and again seizes and swallows them as they fall. The latter manœuvre has been stated by travellers, and the statement has been repeated by compilers, to be performed in order that the alligator may expel from its mouth the water which it has taken in while seizing the fish. This, however, is an absurdity. The fish in the water is taken crosswise; and consequently the reptile, by merely rising to the surface, could easily retain it and expel the water. But the fish, especially if it be of considerable length, is held in such a way as that it cannot easily be swallowed. It is therefore tossed into the air; and following the general law of animals in that state, (for the exception of cats is doubtful,) it comes down head foremost; and thus is either killed at once by the bite, or swallowed with ease. Many of the mammalia deal with their small prey after a similar manner. The dog, for instance, seizes a rat across the body; the vital parts are too far within the gape for the canines; the rat bites; the dog gives a whine, tosses it up in the air, seizes it by the head as it falls, and the rat bites no more.

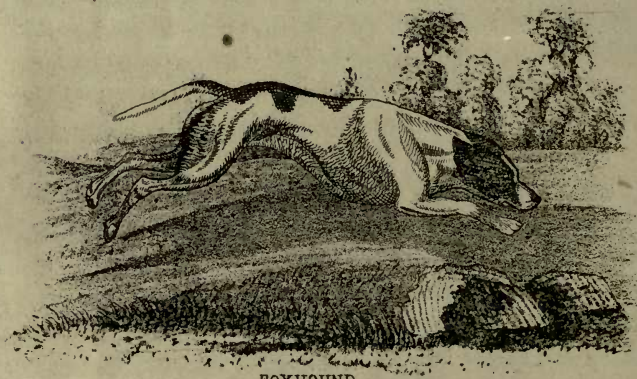
This species of alligator is most numerous in the fresh waters immediately to the northward of the Gulf of Mexico, and it is abundant in proportion as the locality is marshy, full of putrifying things and pestilent. The vast tide of the Mississippi shows, upon the grandest scale any where to be met with, the power of running water over the earth. Trees, forests, islands, are moved about by it, as lightly as dry stubble by the autumnal floods of our rivers; and therefore, excepting in the cold season when they remain torpid in their hybernacula under the banks, it is always harvest time with the alligators, and also with the soft turtle, (*Testudo ferox*,) which is as voracious in proportion to the turtles of other places, as the pike-headed alligator to the other alligators. Many of the accounts of these reptiles as given by authors must be received with deductions; but after every allowance, they are bold and formidable enemies.

The species most frequently met with in the rivers of Guiana, is different in appearance, and not so daring in its manner. It has the head shorter and broader; the teeth smaller, and a bony protuberance over each eye; on which account Cuvier terms it *A. palpebrasus*, the eye-browed alligator. It rarely if ever attacks any animal on land, though in the season of activity it is abundantly active in the water. It was upon the back of one of this species that Mr. Waterton performed that ride which he describes with such graphic naivete, in his "Wanderings in South America." The feat seems a desperate one; but, after all, what could even an alligator (or *caiman* as it is there called) do, with the barbs of a hook, the size of an ordinary fagot, lacerating its stomach, by the joint action of a dozen men pulling it to the beach, and its own resistance in endeavoring to keep the water?

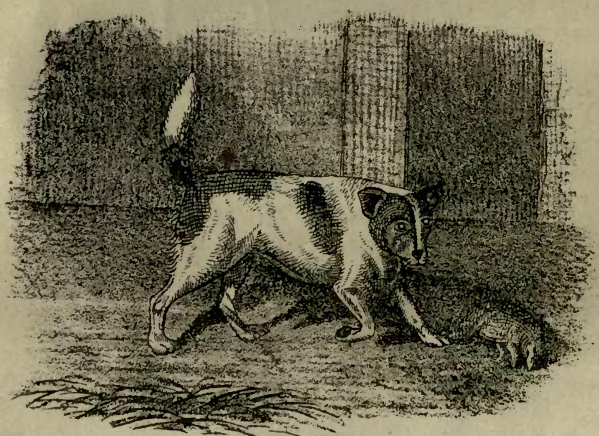
There are other species which inhabit the rivers further to the southward, which have the muzzle more produced; and the accounts state that they are milder in their man-



SPANIEL.

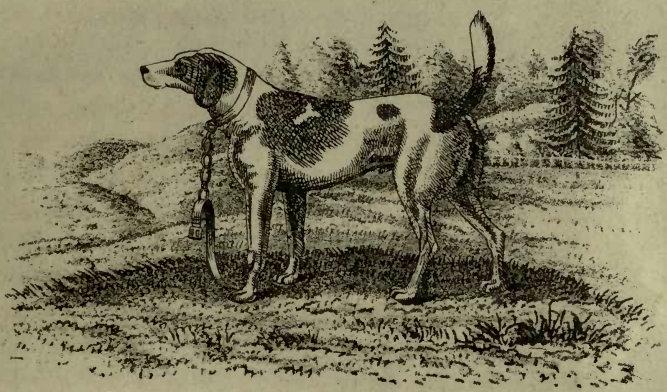


FOXHOUND.

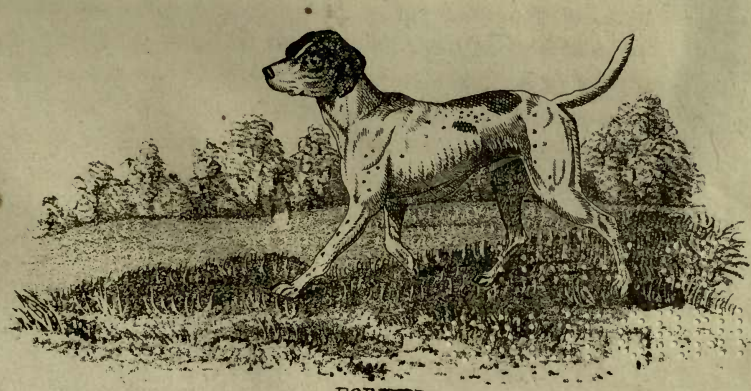


TERRIER.

GREYHOUND.



HARRIER.



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ners in proportion as their habitats are more southerly. Enough has already been said on the general characters; and the specific varieties in form, whether of the animals themselves, or of the plates with which their skins are variously armed, are of small value in a popular point of view, as they have been connected with no peculiarities in the habits of the animals.

DOG.

PLATE XVIII., XIX.—THE DOG.

LARGENESS of the frame, elegance of the form, strength of the body, freedom of the motions, and all the exterior qualities, are not the noblest properties in an animated being; and, as in mankind, understanding is preferred to figure, courage to strength, and sentiment to beauty, so the interior qualities are those which we esteem most in animals; for it is in these that they differ from the automaton; it is by these they are raised above the vegetable, and made to approach nearer to ourselves; it is their sense which ennobles their being, which regulates, which enlivens it, which commands the organs, makes the members active, gives birth to desire, and gives to matter progressive motion, will, and life.

The dog, independently of his beauty, vivacity, strength, and swiftness, has all the interior qualities which can attract the regard of man. The tame dog comes to lay at his master's feet his courage, strength, and talents, and waits his orders to use them; he consults, interrogates, and beseeches; the glance of his eye is sufficient; he understands the signs of his will. Without the vices of man he has all his ardor of sentiment; and, what is more, he has fidelity and constancy in his affections; no ambi-

tion, no interest, no desire of revenge, no fear but that of displeasing him, he is all zeal, all warmth, and all obedience; more sensible to the remembrance of benefits than of wrongs, he soon forgets, or only remembers them to make his attachment the stronger; far from irritating, or running away, he even exposes himself to new proofs; he licks the hand which is the cause of his pain, he only opposes it by his cries, and at length entirely disarms it by his patience and submission.

In deserts, and depopulated countries, there are wild dogs, which in their manners differ only from wolves, by the facility with which they are tamed; they unite also in large troops, to hunt and attack by force wild boars and bulls, and even lions and tigers.

Dogs which have been abandoned in the deserts of America, and have lived wild for a hundred and fifty, or two hundred years, though changed from their original breed, since they are sprung from domestic dogs, have, notwithstanding this long space of time, retained, at least in part, their primitive form, and travellers report that they resemble our greyhound. These wild dogs, however, are extremely thin and light; and as the greyhound does not differ much from the cur, or from the dog which we will call the shepherd's dog, it is natural to think that these wild dogs are rather of this species, than real greyhounds; since on the other side, ancient travellers have said, that the dogs of Canada had the ears straight like foxes, and resembled the middle-sized mastiff, that is, our shepherd's dog, and that those of the deserts of the Antilles isles, had also the head and ears very long, and in appearance very much resemble foxes.

Dogs are commonly born with their eyes shut: the two eyelids are not only closed, but adhere by a membrane, which breaks away as soon as the muscle of the superior eyelid is become strong enough to raise it and to overcome this obstacle; and the greater number of dogs have not

their eyes open till the tenth or twelfth day. They attain their growth in two years. The dog is old at fifteen years, and seldom lives beyond twenty.

THE GREYHOUND.

This elegantly formed animal was once held in such estimation, that it was the peculiar companion of a gentleman, who was anciently known by his horse, his hawk, and his greyhound. In such repute was it, that Canute enacted a law that it should not even be kept by any one who was under the rank of a gentleman. It has a long body, a neat and elongated head, full eye, long mouth, sharp and very white teeth, little ears, with thin gristles in them, a straight neck and full breast; his fore and hind legs are long and straight; his ribs round, strong, and full of sinews, and taper about the belly. It is the swiftest of the dog kind, and easily trained for the chase when twelve months old. It courses by sight and not by scent, as other hounds do; and is supposed to outlive all the dog tribe. Buffon imagines it to be descended from the Irish greyhound, only rendered more thin and delicate by the influence of climate. There is a variety of this species, which is called the Highland greyhound. It is very large, strong, deep-chested, covered with long rough hair, and has the scent and sagacity of the bloodhound. This kind has become exceedingly scarce.

THE SPANIEL.

This beautiful animal is of Spanish extraction, whence it derives its name, and the silky softness of its coat. It is elegant in form, with long pendant ears, and hair gracefully curled or waved. Its scent is keen, and it possesses in the fullest perfection the good qualities of sagacity, docility, and attachment. So strong is the latter, that instances have been known in which the animal has died

of grief for the loss of its master. Dash, a spaniel belonging to the gamekeeper of the Rev. Mr. Corsellis, would not quit his master's bed after his death; being taken away, he perpetually returned to the room, and daily visited the grave; and, in spite of all the kindness that was shown him, he died at the end of fourteen days. The land spaniel may be taught a variety of tricks, such as fetching, carrying, and diving. He is employed in setting for partridges, quails, &c., and his steadiness and patience, in the performance of this task, are worthy of admiration.

THE WATER SPANIEL.

Of all the dog kind, this animal seems to be the most docile, and the most attached to man. Many other species are impatient of correction; but the water spaniel, though fierce to strangers, bears blows and ill usage from his master with undiminished affection. This creature is well calulated for hunting of otters, ducks, &c. Watching the stroke of the piece and perceiving the game that is shot, he instantly swims after it, and brings it to his master. He will fetch and carry at command, and will dive to the bottom of deep water in search of a piece of money, which he will bring out, and deposite at the feet of the person by whom he was sent. Cowper has recorded, in a pleasing poem, an instance of sagacity and of a desire to gratify a master, which was displayed by his spaniel, Beau. As he was walking by the Ouse, he was desirous to obtain one of the water-lilies, which grew in the river, but was unable to reach it. Beau seemed disposed to assist him, but the poet called him off, and pursued his ramble. On his return, however, Beau rushed into the stream, cropped a lily, and laid it at his master's feet.

The following is one of the most remarkable instances of fidelity in this most attached of all the canine race; and though it has been frequently in print, we give it without the least hesitation:—

"A few days before the overthrow of Robespierre, a revolutionary tribunal had condemned Monsieur R., an ancient magistrate, and a most estimable man, on pretence of finding him guilty of a conspiracy. Monsieur R. had a water spaniel, at that time about twelve years old, which had been brought up by him, and had scarce ever quitted his side. Monsieur R. was cast into prison, and in the silence of a living tomb he was left to pine in thought under the iron scourge of the tyrant, who, if he extended life to those whom his wantonness had proscribed, even until death became a *prayer*, it was only to tantalize them with the *blessing* of murder, when he imagined he could more effectually torture them with the *curse* of existence.

"This faithful dog, however, was with him when he was first seized, but was not suffered to enter the prison. He took refuge with a neighbor of his late master's. But, that posterity may judge clearly of the times when Frenchmen existed at *that* period, it must be added, that this man received the poor dog tremblingly, and in secret, lest his humanity for his *friend's dog* should bring him to the scaffold. Every day, at the same hour, the dog returned to the door of the prison, but was still refused admittance. He, however, uniformly passed some time there. Such unremitting fidelity at last won even on the *porter of a prison*, and the dog was at length allowed to enter. The joy of both master and dog was mutual; it was difficult to separate them; but the honest jailer, fearing for himself, carried the dog out of the prison. The next morning, however, he again came back, and once on each day afterward was regularly admitted by the humane jailer. When the day of receiving sentence arrived, notwithstanding the guards, which jealous power, conscious of its deserts, stations

around, the dog penetrated into the hall, and couched himself between the legs of the unhappy man, whom he was about to lose for ever.

"The fatal hour of execution arrives; the doors open; his dog receives him at the threshold! his faithful dog *alone*, even under the eye of the tyrant, dared to own a dying friend! He clings to his hand undaunted. 'Alas! that hand will never more be spread upon thy head, poor dog!' exclaimed the condemned. The axe falls! but the tender adherent cannot leave the body; the earth receives it, and the mourner spreads himself upon the grave, where he passes the first night, the next day, and the second night. The neighbor, meantime, unhappy at not seeing the dog, and guessing the asylum he had chosen, steals forth by night, and finding him, caresses and brings him back. The good man tries every way that kindness could devise to make him eat; but, in a short time, the dog escaping, regained his favorite place. Every morning for three months, the mourner returned to his protector merely to receive his food, and then returned to the ashes of his dead master! and each day he was more sad, more meagre, and more languishing.

"His protector, at length, endeavored to wean him; he tied him; but what manacle is there that can ultimately triumph over nature? He broke or bit through his bonds; again returned to the grave, and never quitted it more. It was in vain that all kind means were used to bring him back. Even the jailer, who had witnessed the strength of his attachment, used to carry him food; but his affection for his master seemed to strengthen as his frame became weaker; and sometimes after he had ceased to take any nourishment, he began digging his own grave in the earth which covered the remains of the object of his attachment, continuing in the feeble performance, till he expired half buried in his master's grave."

The chief difference between spaniels and the other

dogs used in shooting is, that the spaniel gives tongue the instant that he scents the game, and by that means raises it, so that the sportsman may take aim at it on the wing, which is the only gentlemanly way of shooting winged game. They are comparatively weak dogs, and their bite is not very formidable, but they are exceedingly active. The *Springer*, or true spaniel, used in springing game, bears a considerable resemblance to the setter in shape, but is much smaller in size. The colors are red, liver-colored, yellow, and white; their ears are very long, soft, and pliable, and covered with long and very silky and delicate hair; the tail hangs down, and is bushy, but it is in continual motion while they are hunting. The *Cocker* is much smaller, but far more lively and active than the spaniel, and he is so fond of sport, that he can be kept running the whole day long without apparent fatigue. Of the pet spaniels there are many breeds, of which King Charles' and the Blenheim, or Marlborough, are among the most esteemed. Smaller sized than even these, there is an endless variety, but, except for their beauty and attachment, they are of but small value; though all spaniels, from their restlessness, and the proneness they have to give tongue on the least alarm or noise, make excellent watch dogs inside a house, they are too feeble and too delicate for being of much value out of doors during the night. There is one variety, however, which is an exception to this, and that variety is,

THE ALPINE SPANIEL, OR DOG OF ST. BERNARD.

This is a dog far exceeding every other spaniel in size and strength, and also in beauty and sagacity. In the last respect, he is perhaps superior to every other dog. A full-grown one measures six feet from the point of the nose to the end of the tail, and stands at least two feet high at the shoulder. The offices which these beautiful and highly

interesting dogs perform are very different from those to which the bloodhound has often been degraded: and the following account of their labors, services, and sufferings, will be read with interest:—

"The convent of the great St. Bernard is situated at the top of the mountain known by that name, near one of the most dangerous passages of the Alps, between Switzerland and Savoy. On these regions the traveller is often overtaken by the most severe weather, even after days of cloudless beauty, when the glaciers glitter in the sunshine, and the pink flowers of the rhododendron appear as if they were never to be sullied by the tempest. But a storm suddenly comes on; the roads are rendered impassable by drifts of snow; the avalanches, which are huge loosened masses of snow or ice, are swept into the valleys, carrying trees and crags of rock before them. The hospitable monks, though their revenue is scanty, open their doors to every stranger that presents himself. To be cold, to be weary, to be benighted, constitute the title to their comfortable shelter, their cheering meal, and their agreeable discourse. But their attention to the distressed does not end here. They devote themselves to the dangerous task of searching for those unhappy persons who may have been overtaken by the sudden storm, and would perish but for their charitable succor. Most remarkably are they assisted in these truly Christian offices. They have a breed of noble dogs in their establishment, whose extraordinary sagacity often enables them to rescue the traveller from destruction. Benumbed with cold, weary in the search for a lost track, his senses yielding to the stupifying influence of frost, which betrays the exhausted sufferer into a deep sleep, the unhappy man sinks upon the ground, and the snow-drift covers him from human sight. It is then that the keen scent and the exquisite docility of these admirable dogs are called into action. Though the perishing man lie ten, or even twenty feet beneath the

snow, the delicacy of smell with which they can trace him offers a chance of escape. They scratch away the snow with their feet; they set up a continued hoarse and solemn bark, which brings the monks and laborers of the convent to their assistance. To provide for the chance that the dogs, without human help, may succeed in discovering the unfortunate traveller, one of them has a flask of spirits round his neck, to which the fainting man may apply for support, and another has a cloak to cover him. These wonderful exertions are often successful; and, even where they fail of restoring him who has perished, the dogs discover the body, so that it may be secured for the recognition of friends; and such is the effect of the temperature, that the dead features generally preserve their firmness for two years. One of these noble creatures was decorated with a medal, in commemoration of his having saved the lives of twenty-two persons, who but for his sagacity, must have perished. Many travellers who have crossed the passage of St. Bernard since the peace, have seen this dog, and have heard, around the blazing fire of the monks, the story of his career. He died about the year 1816, in an attempt to carry a poor traveller to his anxious family. The Piedmontese courier arrived at St. Bernard in a very stormy season, laboring to make his way to the little village of St. Pierre, in the valley beneath the mountain where his wife and children dwelt. It was in vain that the monks attempted to check his resolution to reach his family. They at last gave him two guides, each of whom was accompanied by a dog, of which one was the remarkable creature whose services had been so valuable to mankind. Descending from the convent, they were instantly overwhelmed by two avalanches, and the same common destruction awaited the family of the poor courier, who were toiling up the mountain in the hope to obtain some news of their expected friend. They all perished. A story is told of one of these dogs, who, having found a child

unhurt, whose mother had been destroyed by an avalanche, induced the poor boy to mount upon his back, and thus carried him to the gate of the convent.

SETTERS AND POINTERS.

The habits of all these dogs are nearly the same; and though they are not so docile, gentle and affectionate, they are indispensable to all who wish successfully to beat the fields or the moors for sport with the gun. They are dogs of fine scent, and admit of very high training. They are silent dogs, and beat or quarter the ground with great activity, discovering the game by scenting the air, standing still at a dead point without moving any part of their bodies when they have discovered it, and after the gun is up and the game down, fetching it to their master. As there is some skill required in breaking or training them properly, a thorough good one is of considerable value. If the dog is not properly trained he is apt to make false points, that is, to point at small birds and other things not worth powder and shot; and not only at these, but also at the forms or places where game has recently been.

The *setter* is understood to be an English dog. It is smaller than the pointer, and not so showy, but it is said to have a better nose, and to be less liable to injury in the feet while beating hard and stony ground. When put to work in enclosures, the setter generally beats round close under the hedges before he begins to quarter the field in breadth. There are two named varieties of setter, independently of the numerous breeds. Indeed, as they are mongrel dogs, produced by crossing, chiefly between spaniels and pointers, the varieties of them may be multiplied without limit. Their hair is, in general, beautifully curled. There is, however, a good deal of trouble in breaking setters, and they cannot be always trusted to after they are broke. Their propensity to stand and point

is not pure; for they have it only as they have the blood of the pointer in them; and in as far as they have the blood of the spaniel, their propensity is to give tongue and put up the game. Of course in the natural state of the animal, these opposite propensities weaken each other; and it is only by careful training that the one can be rooted out and the other established. But if this is once done, the setter is a very valuable dog; and though smaller than the pointer, it quarters the ground faster, and can continue longer.

Pointers. Of these there are several varieties, independently of breeds. In their general form, pointers bear some resemblance to hounds; but the muzzle is shorter, the ears smaller, and partly erect and partly pendulous; and the difference of appearance between them and setters may be observed in the portion of the spaniel character which is necessarily possessed by the latter. The *Spanish* pointer is the finest of the whole, and the greatest care is taken by those interested to preserve this breed as pure as possible. His natural tendency is to be silent and to point; and therefore he not only requires much less training than the others, but is much more sure and steady in his point; and he is at the same time very obedient and docile. He has the disadvantage, however, of being very delicate, both in respect of fatigue and of management; and thus, though a very fine dog, he is rather an expensive one. As a dog for the rough moors, he is inferior to the setter, as he is unable to endure the fatigue of a long morning, and his feet are very liable to be injured. The *English* pointer is a cross between the Spanish and fox-hound and harrier; and though in consequence of this he is more difficult to break than the Spanish, he is upon the whole a more valuable dog for general purposes. He is very handsome, remarkably docile, and when he is properly trained, his nose is very good. In the south of Germany there is a very small breed which is an exact miniature of the

English pointer. The *Russian* pointer is very like the Spanish one in form, except a remarkable peculiarity in the nose, which is so deeply cleft as to appear cut in two, and to procure him the name of the double-nosed pointer. There are various other pointers, and the varieties of the English one in shape, size, and color, are almost endless.

THE FOX HOUND.

This species may be said to be, at the present time, the favorite hound in Britain, and great attention has been paid to the breeds; so that, whether in private kennels or in subscription or country packs, there is perhaps no country in which this variety of dog has been brought to so much perfection as in England. These dogs have a keen scent, and the style of their running is very fine, and especially the air with which they carry their heads. Where the ground will admit of it, fox-hounds run more in rank than any other dogs, and sometimes the column presents a pretty long front in line. The nose of the fox-hound is rather long, and, in proportion to his body, his head is small; his ears are pendulous and long, but not so much so as those of either the stag-hound or blood-hound. His chest is deep, his legs are very straight, his feet round and well proportioned, his breast wide, his back broad, his shoulders are placed well back, his neck thin, his tail bushy and thick, which he carries high when in the chase. His color is generally white, variously patched with black brown and liver color in different parts of the body. Fox-hounds, and indeed all hounds which are kept for hunting in packs, can be regarded as in only a state of partial domestication. They are, as it were, the military of the race, take the field in squadrons, live apart in their kennels or barracks, and do no civil duties.

THE HARRIER.

This species resembles the fox-hound, only it is smaller, less powerful, and generally speaking, not so ferocious. Harriers are more generally kept in Britain than fox-hounds, there being much more scope for hare hunting than for fox hunting; for, as the country becomes more cultivated, foxes diminish in number, while, under the same circumstances, hares increase. Harriers do not run so majestically as fox-hounds, but their cry is much more musical and agreeable.

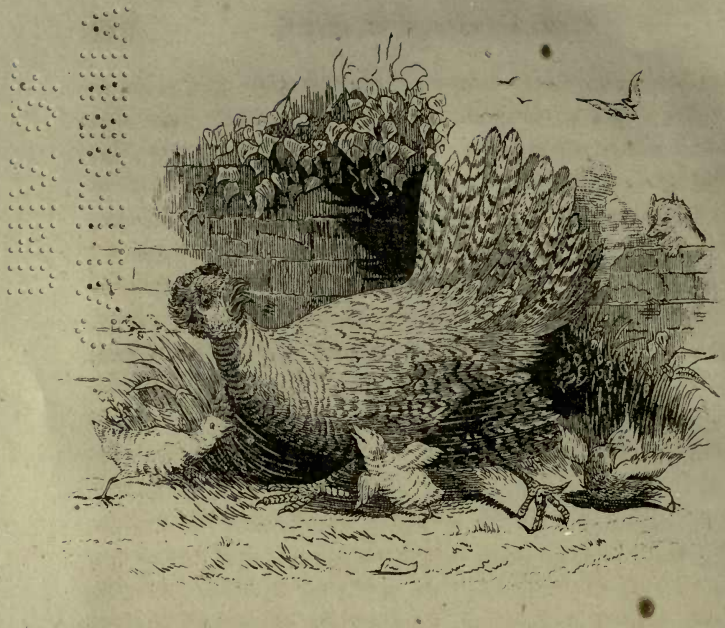
THE BEAGLE.

This is smaller than any of the other varieties of hound, and by no means so fleet in the chase. It, however, possesses qualities which are in some respects superior, being more sagacious, and possessing a much better nose, so that it can follow on the scent in situations where the harrier would be thrown out.

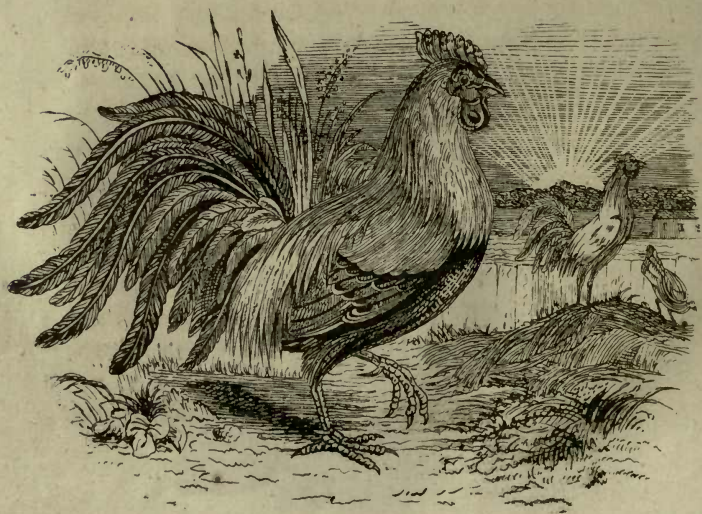
Besides those which have been noticed, there are several other denominations of hounds; but the above must suffice as a general sketch of the race.

Somewhat allied to hounds are the *Terriers*, a smaller breed, but much more strongly made, more courageous, better mouthed, and, along with great sharpness of bite, possessing no inconsiderable share of the bull-dog property of retaining their hold. We believe they are not used in packs, or much in the chase in any way, their chief use being to bring burrowing animals out of their earths; and so staunch are they at this, that a terrier will often draw a badger of more than his own weight. Terriers attack all wild animals indiscriminately, and they are not to be turned from their purpose either by largeness of size or by rankness of smell. They are, properly speaking, the

vermin dog; and though they are very expert at unearthing, and very forward in attacking foxes, hares, and rabbits, they are equally efficient against badgers, polecats, weazles, rats, and mice. On account of their latter propensity, they are very much used about farms, and about houses generally; and, though they are somewhat irritable, they make most efficient watch-dogs, as they are not only very forward to attack, but very formidable, and exceedingly difficult to be vanquished. There is no doubt that a sufficient number of them would be able to overcome the largest wild animal; and they have a sort of natural propensity to the hog tribe, and might, even in smaller number than some dogs of larger size, be efficient against the wild boar. The writer of this article knew a gentleman who had a very fine Scotch terrier, which not only cleared a large farm, and also the farm-yard, of all vermin, but acted as cattle-dog or sheep-dog, as occasion required, and was so vigilant and so formidable a guardian, that no intruder could with impunity either invade the house or trespass on the farm, but used successfully to repel the inroads of a very powerful and fierce boar which used to come in a furious and formidable manner, so much so, indeed, that he often threw the laborers in the fields into the greatest alarm; but if *Trap* happened to get notice of the invasion, the boar, though very large, much in the shape of a wild boar, and of that brindled color, which indicates the nearest approach to that formidable animal, paid severely for his temerity; the dog, who had been trained to keep animals in their right places, but to kill nothing except game and vermin, made no direct attack on the life of the boar. He laid hold of him by the ear, and that hold he kept till the boar, though much stronger and far heavier than the dog, was so completely subdued, as that Trap could lead him by the ear to his own place of abode. The dog had seldom occasion to lead him half way; but he used to watch his motions, and



HEN and CHICKENS.



COCK.

if the boar offered to return, the dog instantly went to meet him, and so punished his other ear, that there was no need for a second warning, at least during the next week.

One of the principal uses of the terrier as a hunting dog is to accompany the fox-hounds; and in cases where all the earths are not carefully stopped, a labor which it is not easy to perform in places where there is much cover, the terrier is indispensable, because his assistance is necessary in unearthing the fox.

COCK, HEN, AND CHICKENS.

PLATE XX.—COCK, HEN, AND CHICKENS.

All birds taken under the protection of man lose a part of their natural figure, and are altered, not only in their habits, but their very form. Climate, food, and captivity, are three very powerful agents in producing these alterations; and those birds that have longest felt their influence under human direction, are the most likely to have the greatest variety in their figures, their plumage, and their dispositions.

Of all other birds, the cock seems to be the oldest companion of mankind, to have been first reclaimed from the forest, and taken to supply the accidental failure of the luxuries or necessities of life. As he is thus longest under the care of man, so of all others perhaps he exhibits the greatest number of varieties, there being scarce two birds of this species that exactly resemble each other in plumage and form. The tail, which makes such a beautiful figure in the generality of these birds, is yet found entirely wanting in others; and not only the tail, but the rump

also. The toes, which are usually four in all animals of the poultry kind, yet in a species of the cock are found to amount to five. The feathers, which lie so sleek and in such beautiful order in most of those we are acquainted with, are in a peculiar breed all inverted, and stand staring the wrong way. Nay, there is a species that comes from Japan, which, instead of feathers, seems to be covered over with hair. These and many other varieties, are to be found in this animal, which seem to be the marks this early prisoner bears of his long captivity.

It is not well ascertained when the cock was first made domestic in Europe, but it is generally agreed that we first had him in our western world from the kingdom of Persia. Aristophanes calls the cock the *Persian bird*, and tells us he enjoyed that kingdom before some of its earliest monarchs. This animal was in fact known so early, even in the most savage parts of Europe, that we are told the cock was one of the forbidden foods among the ancient Britons. Indeed, the domestic fowl seems to have banished the wild one. Persia itself, that first introduced it to our acquaintance, seems no longer to know it in its natural form; and if we did not find it wild in some of the woods of India, as well as those of the Islands in the Indian ocean, we might begin to doubt, as we do with regard to the sheep, in what form it first existed in a state of nature.

But those doubts no longer exist: the cock is found in the island of Tinian, in many others of the Indian ocean, and in the woods on the coast of Malabar, in his ancient state of independence. In his wild condition, his plumage is black and yellow, and his comb and wattles yellow and purple. There is another peculiarity also in those of the Indian woods; their bones, which when boiled with us are white, as every body knows, in these are as black as ebony. Whether this tincture proceeds from their food, as the bones are tinctured red by feeding upon madder, I leave

to the discussion of others: satisfied with the fact, let us decline speculation.

In their first propagation in Europe, there were distinctions then that now subsist no longer. The ancients esteemed those fowls whose plumage was reddish as invaluable; but as for the white, it was considered as utterly unfit for domestic purposes. These they regarded as subject to become a prey to rapacious birds; and Aristotle thinks them less fruitful than the former. Indeed, his division of those birds seems to be taken from their culinary uses; the one sort he calls generous and noble, being remarkable for fecundity; the other sort, ignoble and useless, from their sterility. These distinctions differ widely from our modern notions of generosity in this animal; that which we call the *game-cock* being by no means so fruitful as the ungenerous dunghill-cock, which we treat with contempt. The Athenians had their cock-matches as well as we; but it is probable they did not enter into our refinement of choosing out the most barren of the species for the purposes of combat.

However this be, no animal in the world has greater courage than the cock, when opposed to one of his own species; and in every part of the world where refinement and polished manners have not entirely taken place, cock-fighting is a principal diversion. In China, India, the Philippine islands, and all over the East, cock-fighting is the sport and amusement even of kings and princes. With us it is declining every day; and it is to be hoped it will in time become only the pastime of the lowest vulgar. It is the opinion of many, that we have a bolder and more valiant breed than is to be found elsewhere; and some, indeed, have entered into a serious discussion upon the cause of so flattering a singularity. But the truth is, they have cocks in China as bold, if not bolder, than ours; and, what would still be considered as valuable among cockers here, they have more strength with less weight. Indeed,

I have often wondered why men who lay two or three hundred pounds upon the prowess of a single cock, have not taken every method to improve the breed. Nothing, it is probable, could do this more effectually than by crossing the *strain*, as it is called, by a foreign mixture; and whether having recourse even to the wild cock in the forests of India would not be useful, I leave to their consideration. However, it is a mean and ungenerous amusement, nor would I wish to promote it.

This extraordinary courage in the cock is thought to proceed from his being the most salacious of all other birds whatsoever. A single cock suffices for ten or a dozen hens; and it is said of him, that he is the only animal whose spirits are not abated by indulgence. But then he soon grows old; the radical moisture is exhausted; and in three or four years he becomes utterly unfit for the purposes of impregnation. "Hens also," to use the words of Willoughby, "as they for the greatest part of the year daily lay eggs, cannot suffice for so many births, but for the most part after three years become effete and barren; for when they have exhausted all their seed-eggs, of which they had but a certain quantity from the beginning, they must necessarily cease to lay, there being no new ones generated within.

The hen seldom clutches a brood of chickens above once a season, though instances have been known in which they produced two. The number of eggs a domestic hen will lay in the year are above two hundred, provided she be well fed, and supplied with water and liberty. Her nest is made without any care, if left to herself; a hole scratched into the ground, among a few bushes, is the only preparation she makes for this season of patient expectation. Nature, almost exhausted by its own fecundity, seems to inform her of the proper time for hatching, which she herself testifies by a clucking note, and by discontinuing to lay. The good housewives, who often get more

by their hens laying than by their chickens, artificially protract this clucking season, and sometimes entirely remove it. As soon as their hen begins to cluck, they stint her in her provisions; and if that fails, they plunge her into cold water; this, for the time, effectually puts back ner hatching; but then it often kills the poor bird, who takes cold, and dies under the operation.

If left entirely to herself, the hen would seldom lay above twenty eggs in the same nest, without attempting to hatch them: but in proportion as she lays, her eggs are removed; and she continues to lay, vainly hoping to increase the number. In the wild state the hen seldom lays above fifteen eggs: but then her provision is more difficultly obtained, and she is perhaps sensible of the difficulty of maintaining too numerous a family.

When the hen begins to sit, nothing can exceed her perseverance and patience; she continues for some days immoveable; and when forced away by the importunities of hunger, she quickly returns. Sometimes, also, her eggs become too hot for her to bear, especially if she be furnished with too warm a nest within doors, for then she is obliged to leave them to cool a little: thus the warmth of the nest only retards incubation, and often puts the brood a day or two back in the shell. While the hen sits, she carefully turns her eggs, and even removes them to different situations; till at length, in about three weeks, the young brood begin to give signs of a desire to burst their confinement. When, by the repeated efforts of their bill, which serves like a pioneer on this occasion, they have broke themselves a passage through the shell, the hen still continues to sit till all are excluded. The strongest and best chickens generally are the first candidates for liberty: the weakest come behind, and some even die in the shell. When all are produced, she then leads them forth to provide for themselves. Her affection and her pride seem then to alter her very nature, and correct her imper-

fections. No longer voracious or cowardly, see abstains from all food that her young can swallow, and flies boldly at every creature that she thinks is likely to do them mischief. Whatever the invading animal be, she boldly attacks him; the horse, the hog, or the mastiff. When marching at the head of her little troop, she acts the commander, and has a variety of notes to call her numerous train to their food, or to warn them of approaching danger. Upon one of these occasions, I have seen the whole brood run for security into the thickest part of a hedge, when the hen herself ventured boldly forth, and faced a fox that came for plunder. With a good mastiff, however, we soon sent the invader back to his retreat; but not before he had wounded the hen in several places.

Ten or twelve chickens are the greatest number that a good hen can rear and clutch at a time; but as this bears no proportion to the number of her eggs, schemes have been immagined to clutch all the eggs of a hen, and thus turn her produce to the greatest advantage. By these contrivances it has been obtained that a hen, that ordinarily produces but twelve chickens in the year, is found to produce as many chickens as eggs, and consequently often above two hundred. The contrivance I mean is the artificial method of hatching chickens in stoves, as is practised at Grand Cairo and also in this country; or in a chemical laboratory properly graduated, as has been effected by Mr. Reaumur. At Grand Cairo, they thus produce six or seven thousand chickens at a time; where, as they are brought forth in their mild spring, which is warmer than our summer, the young ones thrive without clutching. But it is otherwise in our colder and unequal climate; the little animal may, without much difficulty, be hatched from the shell; but they almost all perish when excluded. To remedy this, Reaumur has made use of a woollen hen, as he calls it; which was nothing more than putting the young ones in a warm basket, and clapping over them a

thick woollen canopy. I should think a much better substitute might be found; and this from among the species themselves. Capons may very easily be taught to clutch a fresh brood of chickens throughout the year; so that when one little colony is thus reared, another may be brought to succeed it. Nothing is more common than to see capons thus employed; and the manner of teaching them is this: first the capon is made very tame, so as to feed from one's hand; then, about evening they pluck the feathers off his breast, and rub the bare skin with nettles; they then put the chickens to him, which presently run under his breast and belly, and probably rubbing his bare skin gently with their heads, allay the stinging pain which the nettles had just produced. This is repeated for two or three nights, till the animal takes an affection to the chickens that have thus given him relief, and continues to give them the protection they seek for: perhaps also the querulous voice of the chickens may be pleasant to him in misery, and invite him to succor the distressed. He from that time brings up a brood of chickens like a hen, clutching them, feeding them, clucking, and performing all the functions of the tenderest parent. A capon once accustomed to this service, will not give over; but when one brood is grown up he may have another nearly hatched put under him, which he will treat with the same tenderness he did the former.

The cock, from his salaciousness, is allowed to be a short lived-animal; but how long these birds live, if left to themselves, is not yet well ascertained by any historian. As they are kept only for profit, and in a few years become unfit for generation, there are few that, from mere motives of curiosity, will make the tedious experiment of maintaining a proper number till they die. Aldrovandus hints their age to be ten years; and it is probable that this may be its extent. They are subject to some disorders, which it is not our business to describe; and as for poisons,

besides nux vomica, which is fatal to most animals except man, they are injured, as Linnæus asserts, by elder-berries, of which they are not a little fond.

THE CAMEL AND DROMEDARY.

Camelus Bactrianus.—Camelus Dromedarius.

PLATE XXI.—CAMEL AND DROMEDARY.

The genus *Camelus* of which these two are the only individuals, has two upper and six lower incisors; two upper and two lower canines; two upper and two lower false molars; ten upper and ten lower true molars. Inferior incisors in the form of cutting wedges; the superior, lateral; canines conical, erect and strong; false molars on each side in the interdentary space; toes united below; head long; neck very long; upper lip cleft; nostrils slit obliquely; eyes projecting; ears small; back with fatty bunches; callosities on the breast and flexures of the extremities; four ventral mammæ; hair woolly; tail of medium length.

The first, (*Camelus Bactrianus*,) originally derived from ancient Bactriana, is far less numerous and widely spread than the latter, and is restricted to Tartary, Persia, Thibet, and China. The Arabian (*Camelus Dromedarius*) occupies a great extent of territory, and is found, not only in Arabia and Sahara, but in the northern parts of Asia, Egypt Persia, and southern Tartary, while his brethren are confined within comparatively narrow limits. The one inhabits the hottest portions of the globe, the other such as are more temperate; both seem limited to a zone of three or four thousand leagues in breadth, extending from Mau-

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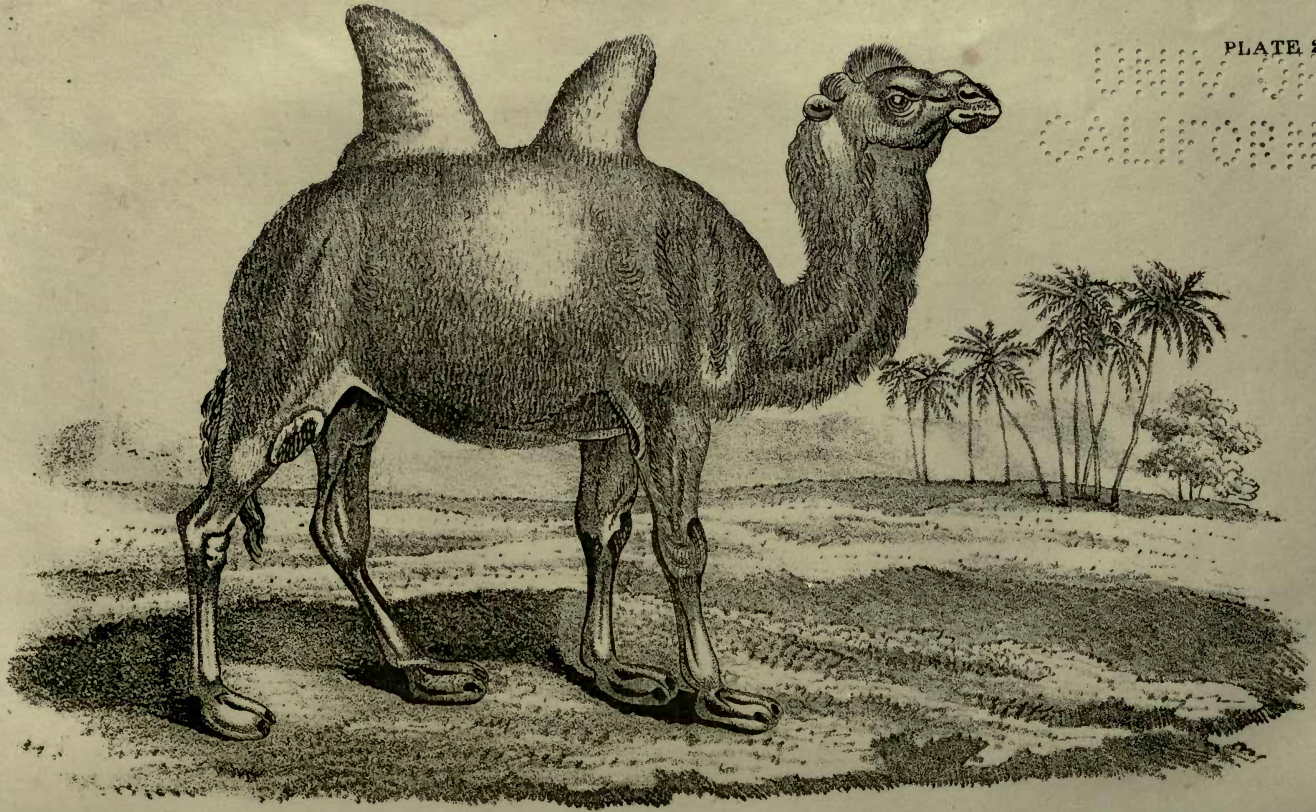
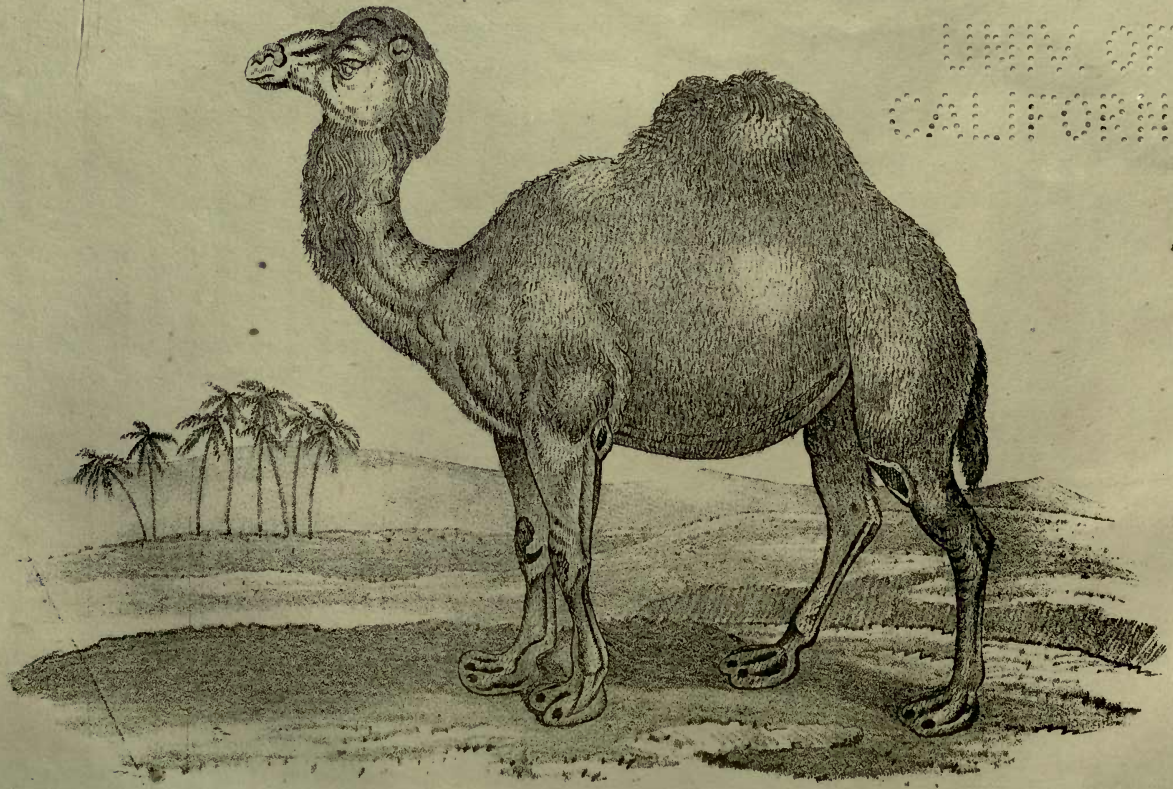


BACTRIAN CAMEL.

PLATE 22.



ARABIAN CAMEL or DROMEDARY.

ritania to China, and on either side of this, they are rarely discovered.

The principal, and, as may be said, the only perceptible character by which these animals differ, consists in the camel's bearing two bunches, or protuberances, and the dromedary only one. The latter is also much less, and not so strong as the camel; but both of them herd and procreate together; and the production from this cross-breed is more vigorous, and of greater value, than the others. This mongrel issue from the dromedary and the camel forms a secondary breed, which also mix and multiply with the first; so that in this species, as well as in that of other domestic animals, there is to be found a great variety, according to the difference of the climates they are produced in. Aristotle has judiciously marked the two principal breeds; the first, (which has two bunches,) under the name of the Bactrian camel; and the second, under that of the Arabian camel. The first are called Turcoman, and the others, Arabian camels. This division still subsists, with this difference only, that it appears, since the discovery of those parts of Africa and Asia which were unknown to the ancients, that the dromedary is, without comparison, more numerous and more universal than the camel. The last being seldom found in any other place than in Turkey, and in some other parts of the Levant; while the dromedary, more common than any other beast of his size, is to be found in all the northern parts of Africa, in Egypt, in Persia, in South Tartary, and in all the northern parts of India.

The dromedary, therefore, occupies an immense tract of land, while the camel is confined to a small spot of ground; the first inhabits hot and parched regions; the second a more moist and temperate soil. The camel appears to be a native of Arabia; for it is not only the country where there is the greatest number, but it is also best accommodated to their nature. Arabia is the driest country in the

world; and the camel is the least thirsty of all animals, and can pass seven days without any drink. The feet of the camel are formed to travel in sand; while, on the contrary, he cannot support himself in moist and slippery ground. Herbage and pasture are wanting to this country, as is the ox, whose place is supplied by the camel.

The Arabs regard the camel as a present from heaven, a sacred animal, without whose aid they could neither subsist, trade, nor travel. It has been emphatically called the ship of the desert. Its milk is their common nourishment; they likewise eat its flesh, especially, that of the young ones, which they reckon very good. The hair of these animals, which is fine and soft, is renewed every year, and serves them to make stuff for their clothing and their furniture. Blessed with their camels, they not only want for nothing, but they even fear nothing. With them, they can, in a single day, place a tract of desert, of fifty miles, between them and their enemies, and all the armies in the world would perish in the pursuit of a troop of Arabs. Let any one figure to himself a country without vendure, and without water, a burning sun, a sky always clear, plains covered with sand, and mountains still more parched, over which the eye extends, and the sight is lost, without being stopped by a single living object. A dead earth, *flayed* (if we may be allowed the expression,) by the winds, which presents nothing but bones of dead bodies, flints scattered here and there, rocks standing upright or overthrown; a desert entirely naked, where the traveller never drew his breath under the friendly shade; where he has nothing to accompany him, and where nothing reminds him of living nature; an absolute void, a thousand times more frightful than that of the forest, whose verdure, in some measure, diminishes the horrors of solitude; an immensity which he in vain attempts to overrun; for hunger, thirst, and burning heat, press on him every weary moment that remains between despair and death.

Nevertheless, the Arab has found means to surmount these difficulties, and even to appropriate to himself these gaps of nature. They serve him for an asylum; they secure his repose, and maintain him in his independence.

An Arab who destines himself to this business of land piracy, early hardens himself to the fatigues of travelling. He accustoms himself to pass many days without sleep; to suffer hunger, thirst, and heat. At the same time he instructs his camels, he brings them up, and exercises them in the same method. A few days after they are born, he bends their legs under their bellies, and constrains them to remain on the earth, and loads them, in this situation, with a weight as heavy as they usually carry, which he only relieves them from, to give them a heavier. Instead of suffering them to feed every hour, and drink even when they are thirsty, he regulates their repasts, and, by degrees, increases them to greater distances between each meal; diminishing, also, at the same time, the quantity of their food. When they are a little stronger, he exercises them to the course; he excites them by the example of horses, and endeavors to render them also as swift, and more robust. At length, when he is assured of the strength and swiftness of his camels, and that they can endure hunger and thirst, he then loads them with whatever is necessary for his and their subsistence. He departs with them, arrives unexpectedly at the borders of the desert, stops the first passenger he sees, pillages the straggling habitations, and loads his camels with his booty. If he is pursued he is obliged to expedite his retreat; and then he displays all his own and his animal's talents.

Mounted on one of his swiftest camels, he conducts the troop, makes them travel day and night, almost without stopping either to eat or drink. In this manner, he easily passes over three hundred miles in eight days; and, during all that time of fatigue and travel, he never unloads his camels, and only allows them an hour of repose and a

ball of paste each day. They often run in this manner for eight or nine days, without meeting with any water, during which time they never drink; and when by chance they find a pool at some distance from their route, they smell the water at more than half a mile before they come to it. Thirst now makes them redouble their pace; and then they drink enough for all the time past, and for as long to come; for often they are many weeks in travelling; and their time of abstinence endures as long as they are upon their journey.

In Turkey, Persia, Egypt, Arabia, Barbary, &c., they use no other carriage for their merchandise, than camels, which is, of all their conveyances, the most ready, and the cheapest. Merchants, and other travellers, assemble themselves in caravans, to avoid the insults and piracies of the Arabs. These caravans are often very numerous, and often composed of more camels than men. Every one of these camels is loaded according to his strength; and he is so sensible of it himself, that when a heavier load than usual is put upon him, he refuses it by constantly remaining in his resting posture, till he is lightened of some of his burden.

As the collecting of such an assemblage requires time, and the imbodying of them is a serious concern, it is concerted with great care. Four officers are appointed to preside over different departments—the chief or head of the caravan, the masters of the march, of the halt, of the distribution. A paymaster is also chosen, and three officers who perform the duties of quarter-master and aides-de-camp, by marshalling the troop when the caravan is attacked, and assigning the station when obliged to encamp. A large caravan is composed of no less than five distinct companies, first the heavy caravan, consisting of elephants, and dromedaries, camels, and horses; secondly, the light caravan, with a small number of elephants; thirdly, the common, which is formed entirely of camels and horses;

fourthly, the horse; in this there are neither camels nor dromedaries.

If the heavy caravan contains five hundred elephants, the chief appoints one thousand camels and dromedaries with an escort of four thousand armed men on horseback. This was the ancient apportioning of a caravan, and as the manners of the East have experienced little change, the arrangements which existed in the patriarchal times, are still conformed to with scarcely any variation.

Each caravan is also provided with a guide, or hybeer, from the Arabic word *hubbar*, to inform or direct; and his services are indispensable in traversing the deserts, whether to or from Egypt, along the coast of the Red Sea, or in the western extremities of Africa. He must be a man of some consideration in his tribe, and it is requisite that he should be acquainted with the situation and properties of all kinds of water, the distances from one well to another, whether occupied or not by hostile tribes, and if so how to avoid them with the least inconvenience. He must also know in what latitudes the terrible simoon or hot wind of the desert is met with, as well as the season of its blowing, and the tracts occupied by moving sands.

This hybeer generally belongs to some powerful Arabian tribe, whose protection he requires in time of danger, or to assist the caravan if necessary. Moses apparently requested Hobab to undertake this office when about to cross the great desert. "And he said unto him, leave us not, I pray thee; forasmuch as thou knowest how we are to encamp in this wilderness, that thou mayest be unto us instead of eyes. And it shall be, if thou go with us, yea, it shall be, that what goodness the Lord shall do unto us, the same will we do unto thee."

Large and strong camels generally carry a thousand, and even twelve hundred weight; the smaller only six or seven hundred. In these commercial journeys they do not travel quick; and as the route is often seven or eight

hundred miles, they regulate their stages. They only walk, and go every day ten or twelve miles; they are disburthened every evening, and are suffered to feed at liberty. If they are in a part of the country where there is pasture, they eat enough in one hour to serve them twenty-four, and to ruminate on, during the whole night; but they seldom meet with pastures, and this delicate food is not necessary for them. They even seem to prefer wormwood, thistles, nettles, furze, and other thorny vegetables, to the milder herbs; and so long as they can find plants to browse on, they very easily live without any drink. When a caravan arrives at a *wadey*, or watering place, in the desert, it usually halts for some days. Nothing can exceed the delight with which both men and beasts reach one of these points.

The facility with which they abstain so long from drinking, is not pure habit, but rather an effect of their formation. Independent of the four stomachs, which are commonly found in ruminating animals, the camel is possessed of a fifth bag, which serves him as a reservoir to retain the water. This fifth stomach is peculiar to the camel. It is of so vast a capacity, as to contain a great quantity of liquor, where it remains without corruption, or without the other aliments being able to mix with it. When the animal is pressed with thirst, or has occasion to dilute the dry food, and to macerate it for rumination, he causes a part of this water to reascend into the stomach, and even to the throat, by a simple contraction of the muscles.

Captain Riley and his Arab-masters and companions came unexpectedly upon one of these wells of water, after traversing for some weeks the great desert of Sahara, which is smooth as the surface of the ocean when unruffled by winds or tempests. This well, situated on the rugged flanks of a steep acclivity, was perhaps, one of the most singular in nature. It lay on the north side of a deep

hollow, round which high stony banks appeared as if worn or washed by water at some unknown period. It was about one hundred feet below the surface of the desert, and from three hundred and fifty to four hundred above the ancient bed of this dry river. The extraordinary instinct of the camel must have first led to the discovery of the well, as not the least indication was perceptible of its having overflowed its banks. The Arab merchants knew of its existence, and whereabout it lay; yet, though they halted near the spot, nearly an hour elapsed before Abdallah discovered it. They then drove their camels up the bank by a winding path, from which huge masses of broken rock had been apparently removed with great toil and labor; when arrived to about fifty yards below the sweet cool spring, water was brought them in a large bowl. "And here," says the narrator, "I ascertained the quantity which a camel could swallow at once. A large goat-skin was filled at least fifteen times, and every drop of this was drunk by our largest camel, amounting to the enormous quantity of sixty gallons, the men meanwhile crying out, 'Has not that camel done yet?—he will drink the well dry.' It was in effect drained very low, but still held out, as the water kept running in, though slowly. This camel was large and old, about nine feet high, and had not drunk any water for twenty days, as I was informed by Sidi Hamet, but the others did not drink as much in proportion."

"Abdallah then called to me," continued Captain Riley, "for I was below, and bade me come up where he was, at the foot of a perpendicular cliff. I clambered over the fragments of great rocks which had fallen down from above, as fast as my strength would permit, and having reached the spot, and seeing no signs of water, the tears flowed down my cheeks, for I concluded that the spring was dried up and we must all perish. 'Look,' said the good natured Arab—I looked and saw water glistening through a fissure

of the rock, and after taking a copious draught, I called my companions, who scrambled up, exclaiming with great eagerness; "Where is the water? for heaven's sake, where is the water? Oh, is it sweet?"

On leaving the site of this ancient spring, which was a dreary abyss, still more gloomy, if possible, than the face of the desert, our travellers proceeded on its burning surface, where no rising of the ground, or rock, or tree, or even the smallest shrub, arrested or relieved the wandering eye. Yet thoughts of joy arose within them while journeying across that dreary solitary waste. "How wonderful," they exclaimed, "is the goodness of Providence in providing a reservoir of pure water to relieve the weary traveller and his camel, in these dry, salt, and torrid regions!" and inexpressible was the gratitude they felt to the great Author of their being for having directed their Arab masters to that spot, where their lives had been preserved, and themselves refreshed, by the cool delicious spring, which seemed kept there by a continual miracle.

This animal bears about him all the marks of slavery and pain; below the breast, upon the sternum, is a thick and large callosity, as tough as horn; the like substance appears upon the joints of the legs. And, although these callosities are to be met with in every animal, yet they plainly prove that they are not natural, but produced by an excessive constraint and pain, as appears from their being often found filled with pus. It is therefore evident, that this deformity proceeds from the custom to which these animals are constrained, of forcing them, when quite young, to lie upon their stomach with their legs bent under them, and in that cramped posture to bear not only the weight of their body, but also the burthens with which they are laden. These poor animals must suffer a great deal, as they make lamentable cries, especially when they are overloaded; and, notwithstanding they are continually

abused, they have as much spirit as docility. At the first sign they bend their legs under their bodies, and kneeling upon the ground, they are loaded, without the trouble of lifting the load a great height, which must happen, were they to stand upright. As soon as they are loaded, they raise themselves up again without any assistance or support; and the conductor, mounted on one of them, precedes the whole troop, who follow him at the same pace as he leads. They have need of neither whip or spur, to excite them; but, when they begin to be fatigued, their conductors support their spirits, or rather charm their weariness, by a song, or the sound of some instrument. When they want to prolong the route, or double the day's journey, they give them an hour's rest; after which, renewing their song, they again proceed on their way for many hours more; and the singing continues until they stop. Then the camels again kneel down on the earth, to be relieved from the burden. They remain in this cramped posture, with their belly crouched upon the earth, and sleep in the midst of their baggage, which is tied on again the next morning, with as much readiness and facility as it was untied before they went to rest.

This interesting statement is confirmed by various travellers. We are told by Olearius, that these patient animals rejoice at the harmonious sound of the human voice: and by Marmont, in "L'Afrique," that when the conductor wishes them to perform extraordinary journeys, instead of chastising, he encourages them with a song, and that, though they had stopped, and refused to proceed any further, they then went cheerfully on, and much quicker than a horse when pushed with the spur. To which we may add the united testimonies of Tavernier and Charbin, who affirm that they proceed quicker or slower according to the cadence of the song; and that, in the same manner, when their conductors want an extraordinary journey to be per-

formed, they know the tunes which the camels love best to hear, and relieve each other by singing alternately.

They have a great plenty of milk, which is thick, and nourishing even for the human species, if it is mixed with more than an equal quantity of water. "This milk is the produce of an animal which we call sacred, and it causes long life," said the generous Sidi Hamet, who redeemed Captain Riley and three of his companions from slavery; "those who live on nothing else are free from disorders of every kind. But only carry the same people off the desert, and let them live on meat, bread, and fruits, they then become subject to pain and sickness, and live out only half their days. I myself," added he, "always feel well when I live only on the milk, even though I do not get half as much as I want; for then I am strong, and can bear heat, cold, and fatigue, much better than when I subsist on flesh, and have plenty of good water; and if I could have sufficient of that, I would never taste meat again."

The females seldom do any labor while they are with young, but are suffered to bring forth at liberty. The profit which arises from their produce, and from their milk, perhaps surpasses that which is got from their labor. In general, the fatter the camels are, the more capable they are of enduring great fatigues. Their haunches appear to be formed only from the superabundance of nourishment; for, in long journeys, where they are obliged to stint them in their food, and where they suffer both hunger and thirst, these haunches gradually diminish, and are reduced almost even, and the eminences are only discovered by the height of the hair, which is always much longer upon these parts than upon any other part of the back.

The young camel sucks its mother a year; and when they want to bring him up so as to make him strong and robust, they leave him at liberty to suck or graze for a longer time, nor begin to load him, or put him to labor,

till he has attained the age of four years. The camel commonly lives forty or fifty years.

The camel is not only of greater value than the elephant, but perhaps not of less than the horse, the ass, and the ox, all united together. He alone carries as much as two mules. He not only eats less, but likewise feeds on herbs as coarse as the ass. The female furnishes milk a longer time than the cow. The flesh of the young camels is good and wholesome, like veal; their hair is finer, and more sought after than the finest wool; there is not a part of them, even to their excrements, from which some profit is not drawn; for sal ammoniac is made from their urine. Their dung, when dried and powdered, serves them for litter, as it does for horses, with whom they often travel into countries where neither straw nor hay is known. In fine, a kind of turf is also made of this dung, which burns freely, and gives a flame as clear, and almost as lively as that of dry wood. Even this is another great use, especially in deserts, where not a tree is to be seen, and where, from the deficiency of combustible matters, fire is almost as scarce as water.

At particular seasons of the year, camel fights are common at Smyrna, and at Aleppo. Such exhibitions are the disgrace of the vulgar (be they the high or the low vulgar,) of all countries; and the lion fights of the savage Romans, the bull fights of Spain, the bull and badger baitings and cock fights of England, and the camel fights of Asia Minor, are equally indications of a barbarian spirit, which can only be eradicated by knowledge and true religion. Of these, however, the camel fights appear the least objectionable.

Mr. Mac Farlane thus describes to us this curious scene: "One of the favorite holiday amusements of the Turks of Asia Minor, is furnished by the camel combats. An inclosure is made, and two camels, previously muzzled, so that they cannot hurt each other much, are driven in, and incited

to fight with each other. Their mode of attack is curious; they knock their heads together, (laterally,) twist their long necks, wrestle with their fore legs, almost like bipeds, and seem to direct their principal attention to the throwing down of the adversary. During this combat, the Turks, deeply interested, will back some one camel and some the other; and they will clap their hands and cry out the names of their respective favorites, just as our amateurs do with their dogs, or as the Spaniards, at their more splendid and more bloody bull fights, will echo the name of the hardy bull, or the gallant *matador*.

"I once, however, chanced to see a less innocent contest, which I have noticed in my volume of travels. This was on the plain between Mounts Sipylus and Tartalee, and the town of Smyrna. It was a fight in downright earnest. Two huge rivals broke away from the string, and set to in spite of their drivers. They bit each other furiously, and it was with great difficulty the devidgis succeeded in separating these, at other times, affectionate and docile animals. The popular amusements which the camel affords in other parts of the East are of a less ferocious nature. At a particular season of the year, the Mahomedans in the neighborhood of Mount Sinai have *camel races*, and this festival is a time of great rejoicing."

Burckhardt relates an interesting story, which beautifully illustrates the surprising instinct of the camel. It was told to him by a man who had himself suffered all the pangs of death:—

"In the month of August, a small caravan prepared to set out from Berber to Daraou. It consisted of five merchants and about thirty slaves, with a proportionate number of camels. Afraid of the robber Naym, who at that time was in the habit of waylaying travellers about the well of Nedjeym, and who had constant intelligence of the departure of every caravan from Berber, they determined to take a more eastern road, by the well Owareyk. They

had hired an Ababde guide, who conducted them in safety to that place, but who lost his way from thence northward, the route being very unfrequented. After five days' march in the mountains, their stock of water was exhausted, nor did they know where they were. They resolved, therefore, to direct their course toward the setting sun, hoping thus to reach the Nile. After two days' thirst, fifteen slaves and one of the merchants died; another of them, an Ababde, who had ten camels with him, thinking that the camels might know better than their masters where water was to be found, desired his comrades to tie him fast upon the saddle of his strongest camel, that he might not fall down from weakness. And thus he parted from them, permitting his camels to take their own way; but neither the man nor the camel were ever heard of afterwards. On the eighth day after leaving Owareyk, the survivors came in sight of the mountains of Shigre, which they immediately recognised; but their strength was quite exhausted, and neither men nor beasts were able to move any further. Lying down under a rock, they sent two of their servants, with the two strongest remaining camels, in search of water. Before these two men could reach the mountain, one of them dropped off his camel, deprived of speech, and able only to move his hands to his comrade as a signal that he desired to be left to his fate. The survivor then continued his route; but such was the effect of thirst upon him, that his eyes grew dim, and he lost the road, though he had often travelled over it before, and had been perfectly acquainted with it. Having wandered about for a long time, he alighted under the shade of a tree, and tied the camel to one of its branches. The beast, however, smelt the water, (as the Arabs express it,) and, wearied as it was, broke its halter, and set off galloping furiously, in the direction of the spring, which, as it afterward appeared, was at half an hour's distance. The man well understanding the camel's action, endea-

vored to follow its footsteps, but could only move a few yards. He fell exhausted on the ground, and was about to breathe his last, when Providence led that way, from a neighboring encampment, Bisharye Bedouin, who, by throwing water upon the man's face, restored him to his senses. They then went hastily together to the water, filled the skins, and returning to the caravan, had the good fortune to find the sufferers still alive. The Bisharye received a slave for his trouble. My informer, a native of Yembo, in Arabia, was the man whose camel discovered the spring; and he added the remarkable circum stance, that the youngest slaves bore the thirst better than the rest, and that, while the grown up boys all died, the children reached Egypt in safety."

Before we dismiss the consideration of the habits and character of the camel, we may, for a moment, direct our views to the aborigines of his native regions. The natural history of this valuable quadruped is so intimately blended with that of his Arab masters, their sterile district, and wandering life, that we cannot pursue the one without referring to the other.

As Riley and his companions proceeded on the flat hard surface, they met from time to time with small dells or valleys scooped out by the hand of nature from ten to thirty feet below the plain, and containing from one to four acres each. Their parched sides were varied with dwarf thorn bushes, green and cheering to the eye, but so strongly impregnated with salt, that, though the travellers were nearly perishing with thirst and hunger, it was impossible to eat them. These hollows served, apparently, as receptacles for the little rain that falls occasionally on the desert, for the wandering Arabs always expect some during the winter months, though they are frequently disappointed; but over that portion of the desert, which Captain Riley and his companions passed, none had fallen for two years.

Such was the face of the desert, until within a short distance of Cape Bajador, where they met with immense heaps of loose sand, forming mountains from one to four hundred feet in height, blown and whirled about by every wind, and dreadful to the traveller; for, should a strong gale arise while in the midst of them, he and his animals must inevitably perish, overwhelmed by flying surges of suffocating sand. It might have been conjectured that this dreadful wilderness was peopled with such fearful creatures as fly the face of man, but our travellers saw none, nor was it a fit dwelling for any animal that requires water. There were neither beasts nor birds, nor reptiles, in all that dreary waste, except a few wild ostriches, and it seemed strange how they could exist there; nor was it known from whence they came.

But all that portion of the Great Desert which Captain Riley traversed, from about the twentieth degree north latitude, where he first put ashore, to near the twenty-eighth, and from the longitude of Cape Barbas, about ten or eleven degrees west, presented a smooth surface, consisting partly of solid rock, gravel, sand, and stone, with occasionally a little soil. This mass had been rendered in many parts nearly as hard as marble by the extreme heat of the sun, so that no tracks of man or beast are discoverable, nor does the heaviest step make the least impression. All is smooth to the eye as the plain of the ocean when unruffled by winds and tempests; not a break nor undulation, a single tree or shrub serves as a guide or landmark to the weary traveller; not a sound is heard but the voice of those gusty winds which sweep over the face of the desert, or the almost noiseless step of the camel's feet on the hard soil.

Nearly every part of this vast desert is inhabited by different tribes of Arabs, who wander from one hollow to another; seeking food for their camels among the dwarf horn-bushes, and also for themselves. They live in tents

formed of cloth made from the camel's hair, which they pull off and spin with a hand-spindle. When preparing to weave it, they drive two rows of pegs into the ground, wrap the yarn around them, and begin their work by running a kind of wooden sword through the yarn, under one thread and over another, in the manner of darning: this sword they never part with, and it appears as if used for ages; they next turn up the sword sideways, pull the work tight, and beat the whole together.

When the materials are completed there is little difficulty in putting up the tent. They sew the pieces together with the same kind of twine, through holes made with an iron bodkin. Four short crooked sticks are then fastened to each end, which answer the purpose of loops, and two on either side. When this is done they spread it out, stretching and fixing the cords by which it is fastened to stout pegs, driven into the ground with a hard smooth stone, that serves the purpose of a hammer. They then creep beneath the awning, and place a block, whose top is rounded like a wooden bowl, in the centre, by means of which the tent is raised and kept steady. The ropes are next tightened, and the tent assumes the shape of an oblong umbrella, about two feet from the ground. During the day they make a doorway by raising up the cloth, with two small props; but as soon as the evening draws on, and the cold wind of the desert begins to blow, they close the entrance, and betake themselves to its shelter for the night. This tent contains the whole family; the mistress and her handmaid, the master and his slave.

The mention of a tent naturally leads us back to the earliest ages of society, to the plains of Mamre, and the wanderings of the patriarchal families. Tents were then most probably of various kinds; some simple as an Arab's, put up or taken down at the shortest notice; others more durable, and even magnificent. They were also of various sizes, and adapted to different ranks, as we may learn

from that ancient volume which contains many interesting sketches of the earliest ages of society. Leah, Rachel, and their maidens had separate ones, but these were smaller and more simple than the statelier tent of the patriarch or chieftain.

The Bedouins call these primitive erections khymas, or coverings, from the grateful shelter they afford, and *beet el char*, or houses of hair. They are similar to those mentioned by Virgil, which being then, as now, secured from the heat and inclement weather by merely a covering of hair cloth, might justly be described as having thin roofs. But however numerous, or differing in size; whether erected by the inhabitants of the plain and mountains, or by the wandering Arabs of Arabia or Sahara, they are uniformly similar; they are all supported with one or more pillars, while in the larger tents a curtain or carpet is so suspended as to separate the whole into compartments. This pillar is sometimes, as we have just noticed, merely a block, at others a straight pole, eight or ten feet high, and three or four inches thick; it serves not only to support the tent, but is also covered with hooks upon which the Arabs hang their baskets, skin bottles, saddles, clothes, and warlike accoutrements. Holofernes hung his falchion upon this pole, which is called in our translation the pillar of the bed, from a custom that prevails in eastern countries, of turning the upper end of the carpet towards the pole. Mr. Bruce farther tells us, that on one occasion, when he claimed protection from an Arab family, he took hold of the pole which supported the tent, according to the custom of the country. This custom is very ancient, and is most probably referred to in the xxvii of Isaiah, verse 5. "Let him take hold of my strength, that he may make peace with me; and he shall make peace with me." Or in other words, if he claims my protection, by taking hold of that which is most sacred in my dwelling, he shall have it, but by resistance he must perish.

The camels, which are driven out early in the morning and home at night, are made to lie down before the tents of their respective owners. A double rope, with a large knot at one end, is then fastened round the knee-joints of the old camels, that lead the droves: this effectually prevents them from rising; while before, or on either side, their young companions repose on the hard sand. Thus they continue till about midnight, when the Arabs are again in motion, the ropes are removed from the leaders, and as soon as they get up, the nets which prevented the young camels from helping themselves are laid aside, and the Arabs begin to milk. When this is done, the nets are carefully put on again, and each are made to lie down in the same place till daylight, at which time they are again roused up, and the young ones are allowed to take their turn. While the head of the family is thus busily employed, the wife and her attendants are striking and folding up the tent, making the camels kneel, and packing on them their simple furniture. They next fasten a leather or skin basket, about four feet wide, on the back of one of the tallest camels, in which they place the old men and women that cannot walk, with their little children, and then proceed according to their daily custom. They keep close to these, and ride by turns; but the other camels are driven off by the slaves, or young men of the tribe, to the nearest hollow, in search of the prickly shrubs which occasionally diversify their parched sides. The head of the family generally precedes the loaded camels. After having described the course they are to steer, he sets off on his camel with a loaded gun, at a full trot, and goes on till he finds a convenient halting-place. The wife proceeds with all possible diligence, as soon as she perceives the accustomed signal, and having halted, unloads her camel, spreads forth her tent, places all the household stuff beneath it, clears away the small stones, unfolds the sleeping mat, arranges the bowls, and hangs up the skins contain-

ing water. Their time for starting is generally before sunrise, and if possible the tent is always pitched about four in the afternoon. When one family sets off, the whole of that portion of the tribe which resides near travel on with them. Five hundred camels are thus frequently collected in a single drove, and yet the Arabs can distinguish and separate them; and each knows his own, even to the smallest in the herd. Sometimes they march together for half a day, then separate, each taking his own course; but as the evening advances, they generally select the same halting place, and pitch their tents within a few miles of one another.

The advantages that result from the constitution, faculties and structure of the camel, are necessarily restricted to his assigned localities. Remove him to another region, his qualifications become less important, his comformation less applicable to the work he may be required to perform. In vain have attempts been made to naturalize him in Spain, in vain has he been transported to America; he has never been reconciled to one country or the other. We do not pretend to say that he will not live in either; but then it is necessary to pay him the utmost attention during winter, to keep a stove in the apartment which is designed for his use, and never to allow him to walk abroad except in the finest weather. In these countries, therefore, he ceases to be of any value; while in his native regions he constitutes the riches of his master. It is true that in Tartary and southern Russia, the Bactrian species are harnessed to wheel-carriages, and even to the plough, but the elevation of their shoulder produces a waste of strength, and in a country where herbage and water are proportionately abundant, their abstemiousness is not required. If the camel be transported to rocky and mountainous parts, his feet are worn with travelling, and he ascends and descends with difficulty. If brought into temperate regions, the frequent mud and thawing of the snow, render him

unable to work; an inconvenience which is partially experienced in central and northern Asia. But then, as a countervailing quality, we may observe that the Bactrian camel, provided by the Creator for his particular locality, has soles of greater hardness than the Arabian, and that, in those countries, the melting of the snow is extremely rapid.

According to M. Desmoulins, the camel existed in a wild state in Arabia during the age of Adrian. At the present day we can only regard them in a domestic character, and the conquest over them as such must be considered one of the most important ever achieved on the brute creation; nor ought this to be attributed to force alone. When the colossal stature and great strength of this noble creature are taken into the account, as well as the obstinacy and fierceness with which he resists aggression, his confiding nature and the persevering gentleness of man are to be looked upon as the principal causes of the victory.

The historians of Greece and Rome rarely notice the services of the camel in north-western Africa and Egypt. They speak repeatedly of him in Arabia, Syria, and the rest of western Asia, and hence we may conclude that the destined locality of this valuable animal was in the sandy deserts of the Sahara, on the arid plains of Arabia, Persia, India and southern Tartary. But the silence of profane writers is compensated by the testimony of Scripture. We read that Pharaoh, King of Egypt, bestowed camels upon Abraham; consequently their existence in the valley of the Nile is established before the era of the earliest Greek or Roman writers. Frequent mention is made of them in the history of the patriarchs. Jacob had much cattle, seven thousand sheep, and three thousand camels, with horses and men. The surrounding nations had also abundance of flocks and herds. In after times the Midianites encamped against Israel with their cattle and tents like grasshoppers for multitude, and both they, and their

camels, were without number. The Hagarites, too, were so rich in camels that the Reubenites took from them in war fifty thousand, with sheep and asses.

These valuable quadrupeds were not only early known, but we have on record a very remarkable instance of the use to which they were applied in battle by Cyrus, King of Persia. When that powerful monarch, so renowned in ancient history, made war against Crœsus, the wealthy king of Lydia, (B. C. 548,) he collected his forces before the gates of Sardis, the Lydian Capital. The sight of the Lydian army, says Herodotus, terrified Cyrus: he dreaded the cavalry. But his fears were removed by adopting the advice of one of his officers. All the camels which followed the rear with the provisions and baggage, were unloaded and placed in the front of the Persian line, to face the enemy's cavalry. This was done, adds the historian, from a knowledge that the horse cannot endure either the sight or the smell of this animal; and the most useful portion of the Lydian army was by this masterly measure rendered unavailing. The engagement was scarcely begun before the appearance of the camels disordered the opposite cavalry: the terrified horses fell back, and the hopes of Crœsus were entirely defeated. The Lydians turned, and fled for refuge within the walls of Sardis, which was soon invested by the victorious foe.

Procopius notices camel-riding Moors in arms against Solyman the First. From that period, and more particularly when the influence of the pretended Arabian prophet extended to Morocco, the camel is repeatedly spoken of as the most important animal then known. It is also very probable that they increased in proportion as agriculture diminished, at least the two facts are coeval. With the progress of Mahometanism also, camels first crossed the Bosphorus, and spread with the Turks over their present dominions in Europe. The late Emperor Leopold, when Grand Duke of Tuscany, introduced them into Italy,

where they have since multiplied considerably: if transferred to our colonies at the Cape of Good Hope, they might be rendered useful in rural economy.

The genus is exclusively confined to the ancient continent. The two known species, probably both Asiatic, are divided into several different races, adapted to the necessities of climate or locality, for burden or for speed. Both appear to be clothed by nature in warm fur, which becomes scantier in the aborigenes of hot regions; and this circumstance seems to afford a fair presumption that the countries they first inhabited were occasionally cold.

The several varieties differ in color, from deep brown, to fawn and white. Those that reside towards the north are thickly clothed in autumn and in winter with two kinds of hair; the one fine, woolly and frizzled, the other long and straight. Both are well-known ingredients in manufacture by the names of mohair and camlet. As we advance towards the south, the frizzled hair is almost superseded by a short and scantier fur, while a longer and less rigid garment envelopes the forepart of the neck, throat, and shoulders.

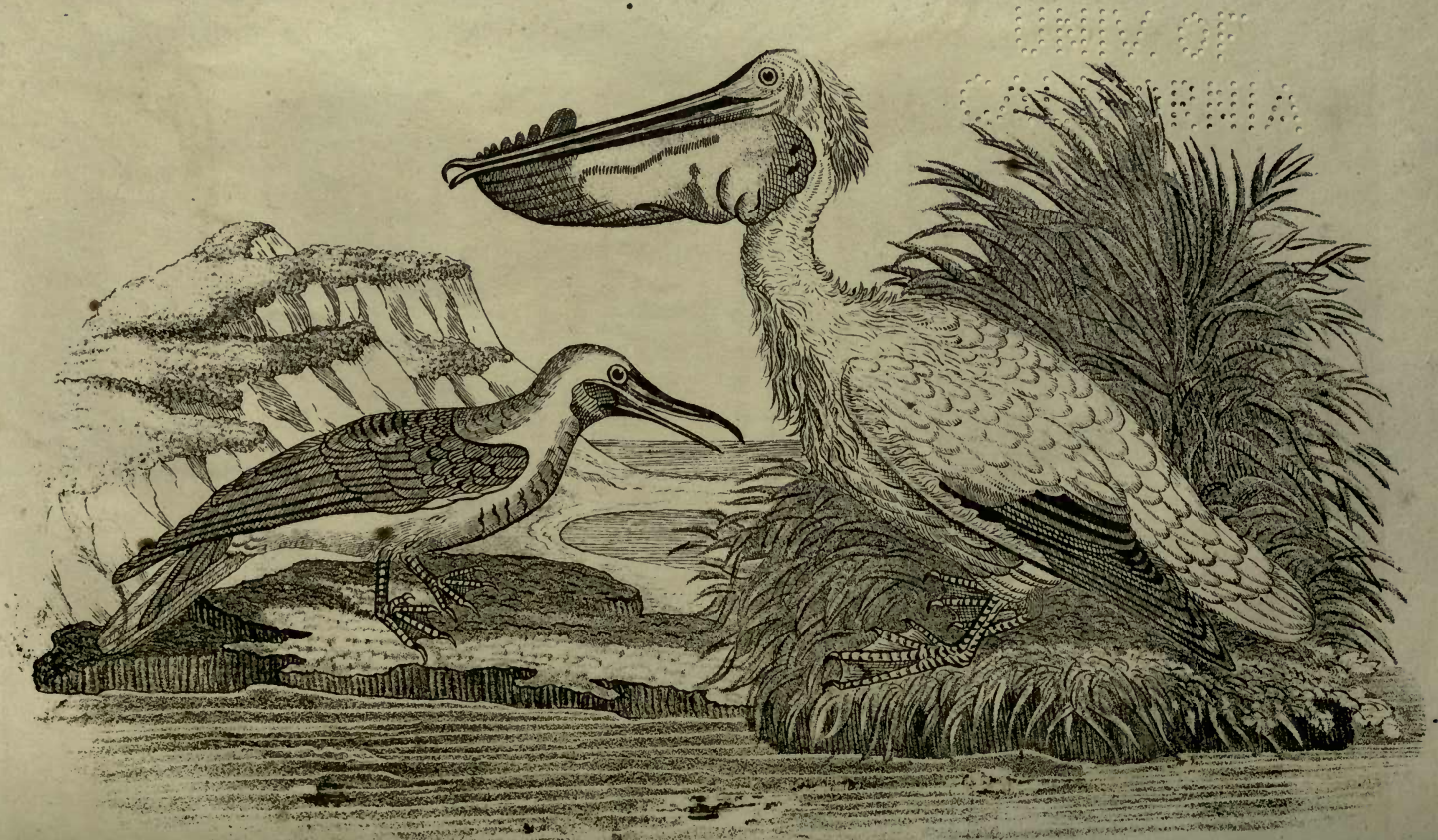
Some inference of their intelligence may be drawn from the obstinacy they occasionally show, and their desire of revenge when unkindly treated. He who has given them offence is sure to incur their resentment; but, having gratified this feeling, all remembrance of injury is past. Knowing this peculiarity of temper, the offending camel-driver throws down his clothes within sight of the enraged animal, and hastens to conceal himself. The camel, on his part, tosses them about, and tramples on them till, his anger being fully satisfied, the driver reappears, and the whole business is forgotten.

The Bactrian camel is readily distinguished by two humps which adorn his back; his weight is superior to the Arabian, and his size larger. He is most probably the origin of the Chinese Tong; a species so remarkably fleet

as to be named Tong-kyo, or camels with feet of wind. Morgan notices one of these swift camels in his history of Algiers. It belonged to the Princess Lella Oumane, and was so greatly valued by her, that she never sent it forth, but on some extraordinary occasion, or when the greatest expedition was required. This creature would hold on its rapid course for twenty-four hours, without showing the least fatigue, and then, having swallowed one or two balls of a kind of paste composed of barley-meal and dried dates, with a bowl of milk or water, it would seem quite refreshed, and be ready to continue running at the same incredible rate for as many hours longer, from one end of the African desert to the other. On the marriage of the princess's only daughter, this favorite white dromedary was brought forth. It was mounted by an experienced rider, tightly laced in a strong leather jacket, for so violent is this kind of exercise that were he to be loosely clothed, the unremitting agitation would severely injure him. The noble creature was once raced against some of the fleetest coursers that ever scoured the desert, so fleet that they could run down an ostrich, but they were soon distanced, till at length the dromedary was seen flying towards the spectator with amazing velocity, and in a very few moments was among them, without the slightest appearance of fatigue, while the horses foamed and panted, and seemed scarcely able to breathe. There was also a fleet greyhound which had followed and kept pace the whole time, but was no sooner returned than she too lay down and panted, as if ready to expire. The young princess challenged their new brother-in-law to lay his bride a wager of one thousand ducats that the camel could not bring him an answer to a letter from the Prince of Hargala in less than four days. This chieftain resided at no less than four hundred miles distant. But the Bey, who was a native of Biscara, would not accede to the proposal, and several Arabs who heard the conversation,

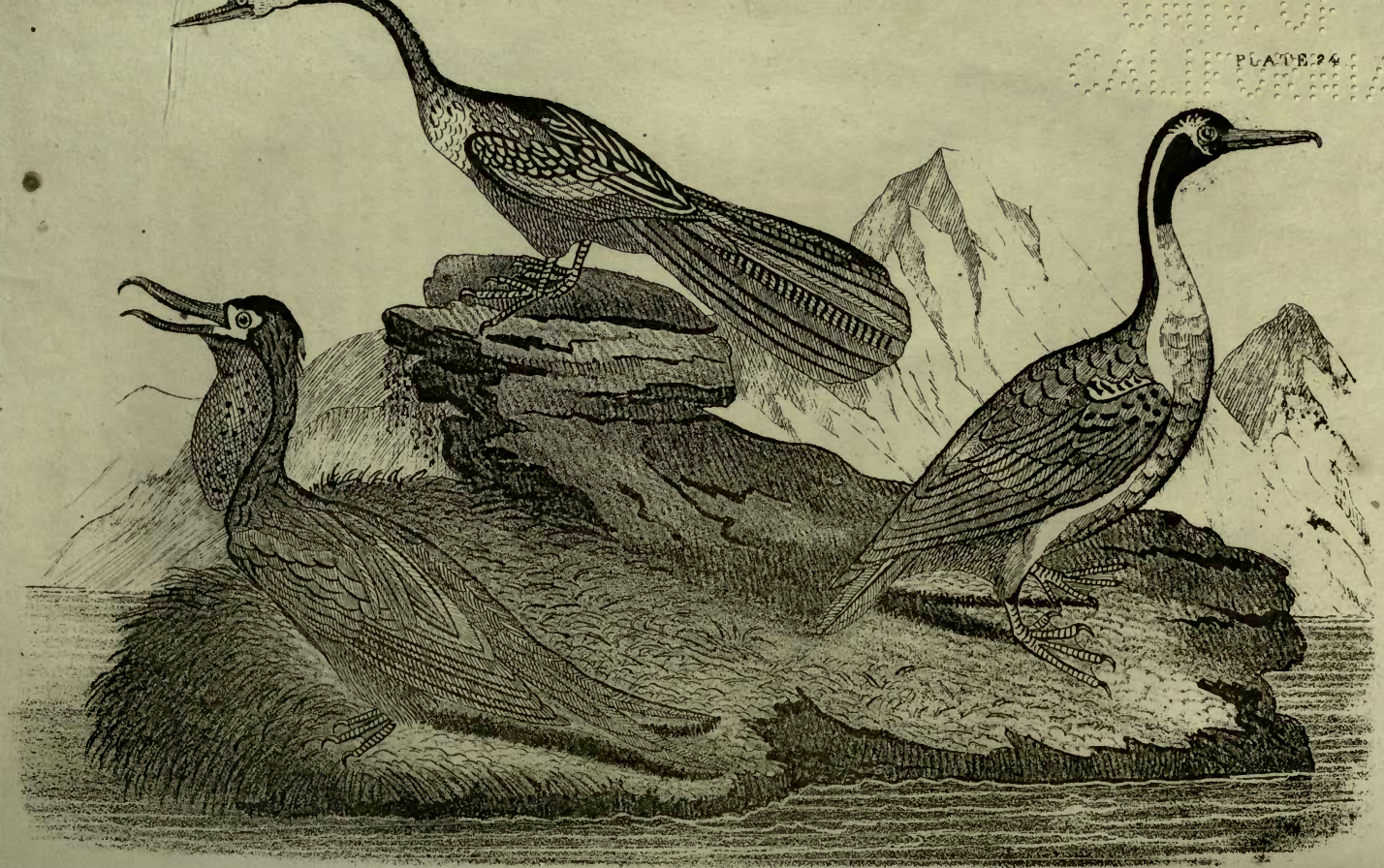
declared their firm belief that this rapid quadruped would have performed the journey with perfect ease.

These camels, with feet like the wind, are principally kept for purposes of state, or as couriers. On high occasions they are elegantly caparisoned, and covered with red velvet cloth, and pack-saddles of the same costly materials, embroidered with gold—a very ancient practice, for we read in Judges of golden ornaments on the necks of the Midianitish Camels which Gideon took, and of the chain about their necks. This species is probably the one mentioned in Holy Writ, as being used in war, on account of their astonishing fleetness; in peace to carry despatches from one country to another. We hear of David smiting the Amalekites, all except four hundred men, who rode upon camels, and fled: and of the amazing despatch with which the reversal of the edict which had been obtained from Ahasuerus by proud Haman was conveyed throughout his dominions.



BOOBY PELICAN.

ROUGH BILLED PELICAN.



FRIGATE PELICAN. SPOTTED SHAG. BLACK-BELLIED DARTER.

THE PELICAN.

PLATE XXIII, XXIV.—THE PELICAN.

The Pelican of Africa is much larger in the body than a swan, and somewhat of the same shape and color. Its four toes are all webbed together; and its neck, in some measure, resembles that of a swan: but that singularity in which it differs from all other birds is in the bill and the great pouch underneath, which are wonderful, and demand a distinct description. This enormous bill is fifteen inches from the point to the opening of the mouth, which is a good way back behind the eyes. At the base the bill is somewhat greenish, but varies towards the end, being of a reddish-blue. It is very thick in the beginning, but tapers off to the end, where it hooks downwards. The under chap is still more extraordinary; for to the lower edges of it hangs a bag, reaching the whole length of the bill to the neck, which is said to be capable of containing fifteen quarts of water. This bag the bird has the power of wrinkling up into the hollow of the under chap; but by opening the bill and putting one's hand down into the bag it may be distended at pleasure. The skin of which it is formed will then be seen of a bluish ash-color, with many fibres and veins running over its surface. It is not covered with feathers, but a short downy substance, as smooth and as soft as satin, and is attached all along the under edges of the chap, to be fixed backward to the neck of the bird by proper ligaments, and reaches near half way down. When this bag is empty it is not seen; but when the bird has fished with success, it is then incredible to what an extent it is often dilated. For the first thing the Pelican does in fishing is to fill up the bag; and then it returns to digest its burden at leisure. When the bill is open to its widest extent, a person may run his head into the bird's

mouth, and conceal it in this monstrous pouch, thus adapted for very singular purposes. Yet this is nothing to what Ruysch assures us, who avers that a man has been seen to hide his whole leg, boot and all, in the monstrous jaws of one of these animals. At first appearance this would seem impossible, as the sides of the under chap, from which the bag depends, are not above an inch asunder when the bird's bill is first opened; but then they are capable of great separation; and it must necessarily be so, as the bird preys upon the largest fishes, and hides them by dozens in its pouch. Tertre affirms that it will hide as many fish as will serve sixty hungry men for a meal.

Such is the formation of this extraordinary bird, which is a native of Africa and America. The Pelican was once also known in Europe, particularly in Russia. This is the bird of which so many fabulous accounts have been propagated; such as feeding its young with its own blood, and its carrying a provision of water for them in its great reservoir in the desert. But the absurdity of the first account answers itself; and as for the latter, the Pelican uses its bag for very different purposes than that of filling it with water.

Its amazing pouch may be considered as analagous to the crop in other birds, with this difference, that as theirs lies at the bottom of the gullet, so this is placed at the top. Thus, as pigeons and other birds macerate their food for their young in their crops and then supply them, so the Pelican supplies its young by a more ready contrivance, and macerates their food in its bill, or stores it for its own particular sustenance.

The ancients were particularly fond of giving this bird admirable qualities and parental affections. Struck, perhaps, with its extraordinary figure, they were willing to supply it with as extraordinary appetites; and having found it with a large reservoir, they were pleased with turning it to the most tender and parental uses. But the

truth is, the Pelican is a very heavy, sluggish, voracious bird, and very ill-fitted to take those flights or make those cautious provisions for a distant time which we have been told they do. Father Labat, who seems to have studied their manners with great exactness, has given us a minute history of this bird, as found in America; and from him I will borrow mine.

The Pelican, says Labat, has strong wings, furnished with thick plumage of an ash color, as are the rest of the feathers over the whole body. Its eyes are very small when compared to the size of its head; there is a sadness in its countenance, and its whole air is melancholy. It is as dull and reluctant in its motions, as the flamingo is sprightly and active. It is slow of flight; and when it rises to fly, performs it with difficulty and labor. Nothing, as it would seem, but the spur of necessity, could make these birds change their situation, or induce them to ascend into the air; but they must either starve or fly.

They are torpid and inactive to the last degree, so that nothing can exceed their indolence but their gluttony; it is only from the stimulations of hunger that they are excited to labor; for otherwise they would continue always in fixed repose. When they have raised themselves about thirty or forty feet above the surface of the sea, they turn their head with one eye downwards, and continue to fly in that posture. As soon as they perceive a fish sufficiently near the surface, they dart down upon it with the swiftness of an arrow, seize it with unerring certainty, and store it up in their pouch. They then rise again, though not without great labor, and continue hovering and fishing, with their head on one side, as before.

This work they continue with great effort and industry till their bag is full, and then they fly to land, to devour and digest at leisure the fruits of their industry. This, however, it would appear, they are not long in performing; for towards night they have another hungry call, and they

again reluctantly go to labor. At night, when their fishing is over, and the toil of the day crowned with success, these lazy birds retire a little way from the shore; and, though with the webbed feet and clumsy figure of a goose, they will be contented to perch no where but upon trees, among the light and airy tenants of the forest. There they take their repose for the night; and often spend a great part of the day, except such times as they are fishing, sitting in dismal solemnity, and, as it would seem, half asleep. Their attitude is, with the head resting upon their great bag, and that resting upon their breast. There they remain, without motion, or once changing their situation, till the calls of hunger break their repose, and till they find it indispensably necessary to fill their magazine for a fresh meal. Thus their life is spent between sleeping and eating; and our author adds, that they are as foul as they are voracious, as they are every moment voiding excrement in heaps as large as one's fists.

The same indolent habits seem to attend them even in preparing for incubation, and defending their young when excluded. The female makes no preparation for her nest, nor seems to choose any place in preference to lay in; but drops her eggs on the bare ground to the number of five or six, and there continues to hatch them. Attached to the place, without any desire of defending her eggs or her young, she tamely sits and suffers them to be taken from under her. Now and then she just ventures to peck or to cry out when a person offers to beat her off.

She feeds her young with fish macerated for some time in her bag, and when they cry, flies off for a new supply. Labat tells us that he took two of these when young, and tied them by the leg to a post stuck into the ground, when he had the pleasure of seeing the old one for several days come to feed them, remaining with them the greatest part of the day, and spending the night on the branch of a tree that hung over them. By these means they were all three

become so familiar that they suffered themselves to be handled; and the young ones very kindly accepted whatever fish he offered them. These they always put in their bag, and then swallowed at their leisure.

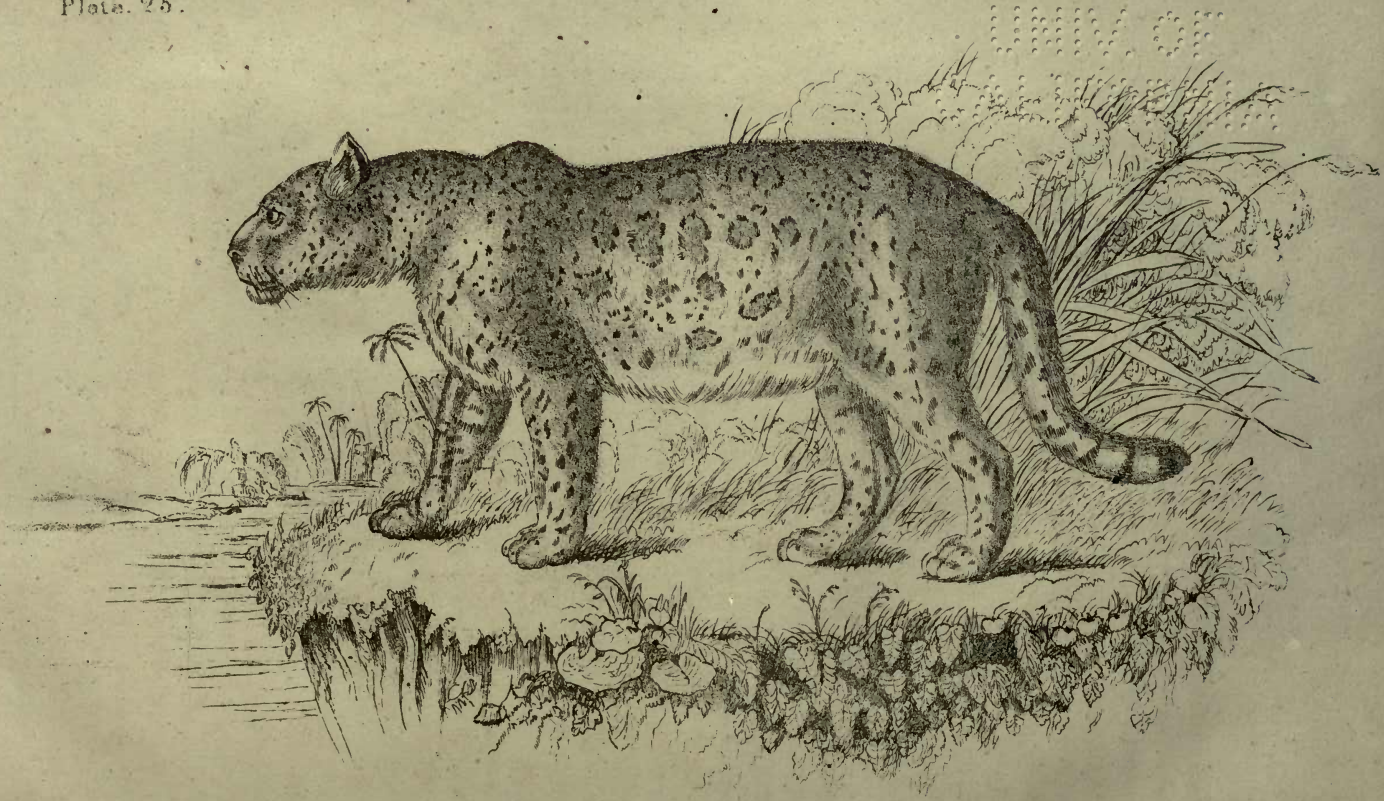
It seems, however, that they are but disagreeable and useless domestics; their gluttony can scarcely be satisfied, their flesh smells very rancid, and tastes a thousand times worse than it smells. The natives kill vast numbers; not to eat, for they are not fit even for the banquet of a savage; but to convert their large bags into purses and tobacco pouches. They bestow no small pains in dressing the skin with salt and ashes, rubbing it well with oil, and then forming it to their purpose. It thus becomes so soft and pliant that the Spanish women sometimes adorn it with gold and embroidery to make work-bags of.

Yet with all the seeming hebetude of this bird, it is not entirely incapable of instruction in a domestic state. Father Raymond assures us that he has seen one so tame and well educated, that it would go off in the morning at the word of command, and return before night to its master, with its great pouch distended with plunder; a part of which the savages would make it disgorge, and a part they would permit it to reserve for itself.

"The Pelican," as Faber relates, "is not destitute of other qualifications. One of those which was brought alive to the Duke of Bavaria's court, where it lived forty years, seemed to be possessed of very uncommon sensations. It was much delighted in the company and conversation of men, and in music, both vocal and instrumental: for it would willingly stand," says he, "by those that sung or sounded the trumpet; and stretching out its head, and turning its ear to the music, listened very attentively to its harmony; though its own voice was little pleasanter than the braying of an ass." Gesner tells us that the Emperor Maximilian had a tame Pelican, which lived for above eighty years, and that always attended his army

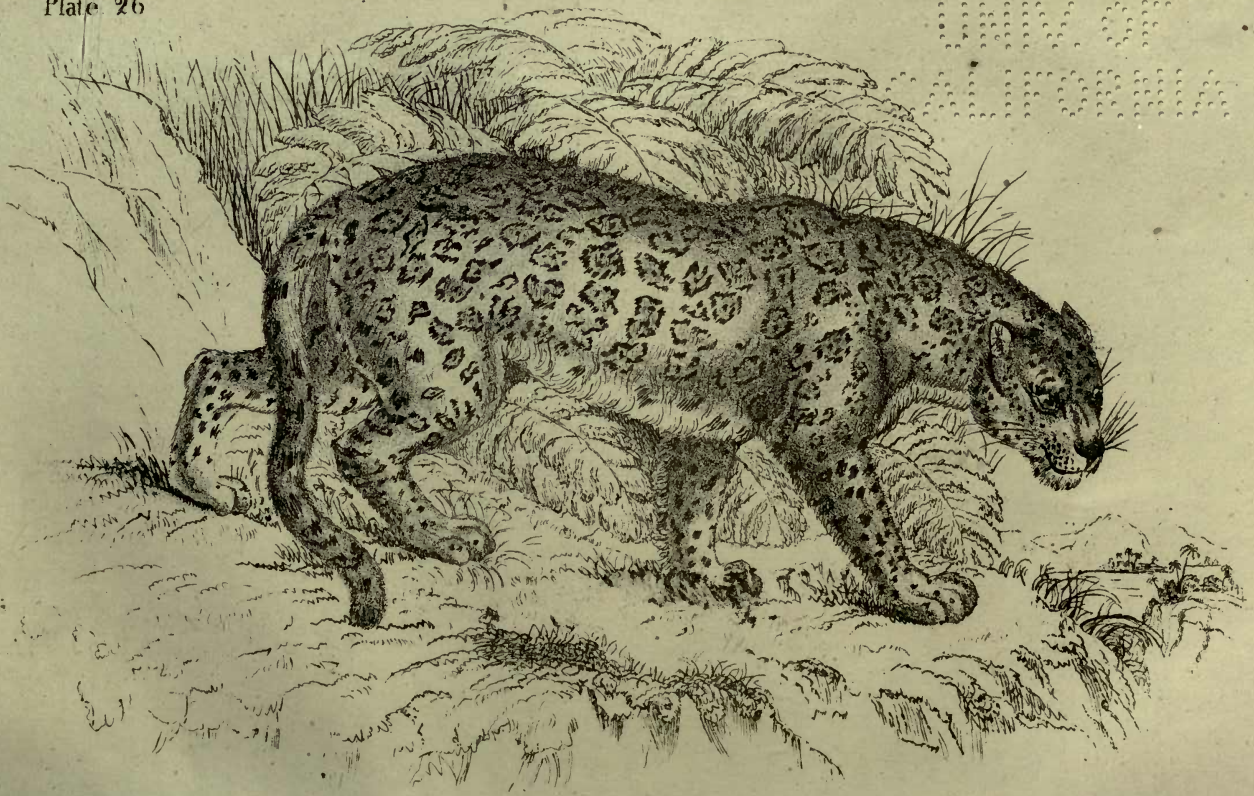
on its march. It was one of the largest of the kind, and had a daily allowance by the Emperor's orders. As another proof of the great age to which the Pelican lives, Aldrovandus makes mention of one of these birds that was kept several years at Mechlin, and was verily believed to be fifty years old.

Plate. 25.



JAGUAR Male

Plate 26



JAGUAR. Female.

JAGUAR, OR AMERICAN PANTHER.

Felis onca.—Linnæus.

PLATE XXV. THE JAGUAR.

The continents of Asia and Africa we have seen inhabited by species beautiful from the rich and spotted markings of their skins; while their size and proportions were still large and powerful. In the warmer parts of the New World, we have a prototype, rivalling them in beauty, and exceeding them in strength, but apparently filling the same station in animal life.

The Jaguar, or, as he is sometimes called, the American Panther, inhabits the warmer parts of South America, chiefly Paraguay and the Brazils, but is nevertheless found from the most southern extremity to the isthmus of Darien. It is one of the strongest and most powerful of the Felinæ after the Tiger; and its thick and compact limbs and form, independent of the difference in marking, at once distinguish it from the spotted or ringed Cats of the old world; yet it is only within these few years that the distinctions have been pointed out, the quotation of the plates of Buffon, the copies that were afterwards made from them, gave rise to considerable confusion between it and the Leopard.

The markings of this animal vary very much, as may be seen from the accompanying illustrations; and after much research in America, Major H. Smith has come to the conclusion, that there are in reality two varieties, which he characterizes under the titles of the Great and Lesser Jaguar, the large species measuring about 2 feet 10 inches in height at the shoulder, the smaller one about 2 feet 2 inches. The lesser variety, of which Major Smith has given a figure, was of a paler, almost ashy color, the spots few and very distinct.

The Jaguar inhabits the forests, and seeks its prey by

watching, or by openly seizing the cattle and horses in the enclosures. It actively pursues smaller animals, and even the monkeys, with all their agility, are not exempted from its attacks. It climbs "freely and expertly." Sonnini tells us, that "he has seen the prints left by the claws of the Jaguar on the smooth bark of a tree forty or fifty feet in height, and without branches, and although several slips could be traced, it had at length succeeded in reaching the very top." "Sometimes, after a long silence, says Humboldt, "the cry of the Jaguar comes from the tops of the trees; and in this case it was followed by the sharp and long whistling of the monkeys, which appeared to flee from the danger that threatened them." But horses, oxen and sheep are his favorite seizures, and the depredations committed are sometimes very extensive. Nor is it to be wondered at that the inroads of these creatures are looked upon with horror, when one is possessed of sufficient strength to carry off a horse; and their numbers are so prodigious that 4000 were killed annually in the Spanish Colonies, and 2000 were exported every year from Buenos Ayres alone.

Among the Pampas of Paraguay, great havoc is committed among the herds of horses, and the swiftness of the courser is unavailing before one of these relentless foes. Fear seems to paralyze his efforts, a spring brings the formidable assailant upon his back, and he is either brought to the ground by the weight, or the neck is broken by a blow or twist on the muzzle. A full grown Jaguar is quite able to drag off a horse. Azara caused the body of a horse which had newly fallen a victim to this animal, to be drawn within musket shot of a tree, in which he intended to pass the night, anticipating that the Jaguar would return in the course of it to its victim; but while he was gone to prepare for the adventure, the animal returned from the opposite side of a large and deep river, and having seized the horse with its teeth, drew it for about sixty paces, to the

water, swam across with its prey, and then drew it into a neighboring wood, in sight the whole time of a person whom D'Azara had left concealed to observe what might happen before his return. Its prey, however, is very various, and its taste by no means confined to what may be called the finer game of the plain or forest. They take the water very freely, and are said even to fish in the shallows, seizing the fish with their paws. I am not sure that we have very good authority for this, but as the common domestic cat has been known to be a successful angler, the Jaguar may have similar abilities. We have better authority for their partiality to turtles. Humboldt relates, "We were shown large shells of turtles emptied by the Jaguars. These animals follow the *arraus* towards the beaches, when the laying of eggs is to take place. They surprise them on the sand; and in order to devour them at their ease, turn them in such a manner that the under shell is uppermost. In this situation the turtles cannot rise; and as the Jaguar turns many more than he can eat in one night, the Indians avail themselves of his cunning and malignant avidity. When we reflect on the difficulty that the naturalist finds in getting out the body, without separating the upper and under shells, we cannot enough admire the suppleness of the tiger's paw, which empties the double armor of the *arraus*, as if the adhering parts of the muscles had been cut by a surgical instrument. The Jaguar pursues the turtle quite into the water, when not very deep. It even digs up the eggs; and, together with the crocodile, the herons, and the gallinago vulture, is the most cruel enemy of the little turtles recently hatched.

Like their congeners, they do not attack man when unannoyed, but are neither very easily scared from their prey, nor do they readily flee from his approach. They will often follow travellers, Humboldt remarks, even when they will not attack them, skirting the road, and appearing only at intervals among the bushes; and during his long

abode in America, the same traveller heard of only one example of a Llanera who was found torn in his hammock, opposite the island of Achaguas. In another part of the narrative of this accomplished traveller, we have the following anecdote, which shows the Jaguar to be very easily frightened; we doubt, however, if the forbearance of the animal would have been very long continued. "Two Indian children, a girl and a boy, the one about seven, the other about nine years old, were at play on the outskirts of the same village, when a large Jaguar, about two o'clock in the afternoon, came out of the woods and made towards them, playfully bounding along, his head down, and his back arched, in the manner of a cat. He approached the boy in this way, and began to play with him; nor was the latter even sensible of his danger, until the Jaguar struck him so hard on the head with his paw, as to draw blood, whereupon the little girl, with a small switch which she had in her hand, struck him, and he was already bounding back again, not at all irritated, to his retreat, when the Indians of the village, alarmed by her cries, came up to them."

The traveller who is unfortunate enough to meet this formidable beast, especially if it be after sunset, has but little time for consideration. Should it be urged to attack by the cravings of appetite, it is not any noise or firebrand that will save him. Scarcely any thing but the celerity of a musket ball will anticipate its murderous purpose. The aim must be quick and steady, and life or death depend upon the result.

As population extends, animals, of this description in particular, are lessened in number; for, with all their natural powers of body, they are no match for the artificial resoures of man. Accordingly, many parts of South America, which were once grievously pestered with Jaguars, are now almost freed from them, or are only occasionally troubled with their destructive incursions.

The Jaguar is generally hunted with dogs, which run him to bay, or make him take refuge in a tree, where he is kept till the coming up of the hunters, who shoot him, or disable him with their long spears. He is also said to be hunted singly, the huntsman having his left arm defended by a sheep's skin, on which he receives the animal's spring, and stabs him with a spear, about five feet in length.

Jaguars are occasionally met with having the ground color of the skin of a very deep brown tinge, almost approaching to black; on these the markings are of a still deeper shade. This variety is rare, and has never been well or characteristically figured. Azara has also mentioned a white variety, with the rings appearing darker in particular lights. This seems to be still more rare.

DOLPHIN.

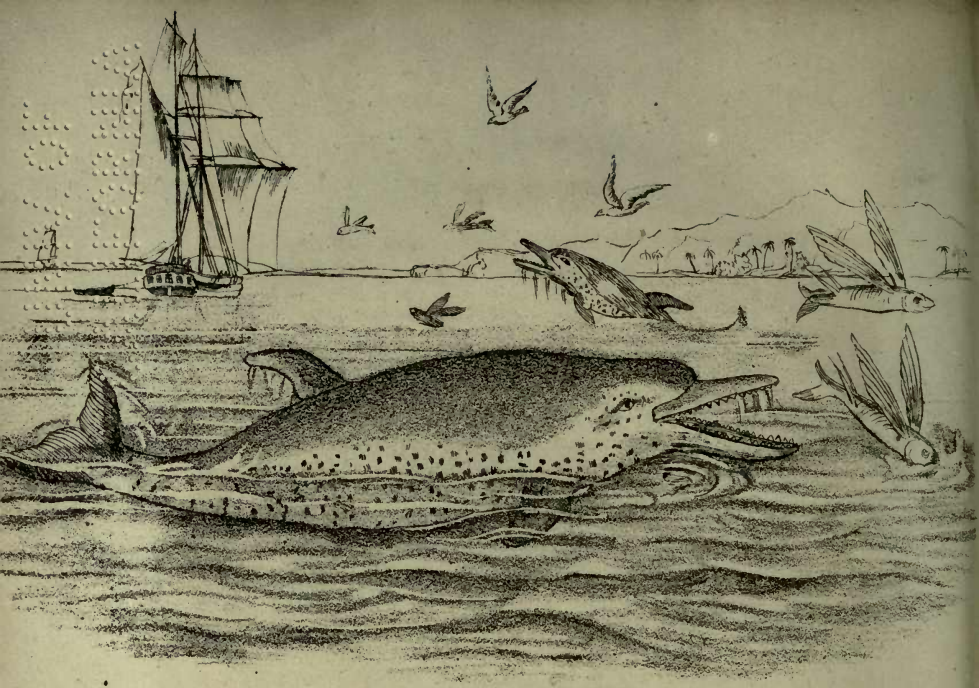
Genus—Delphinus.

PLATES XXVI. AND XXVII. THE DOLPHIN.

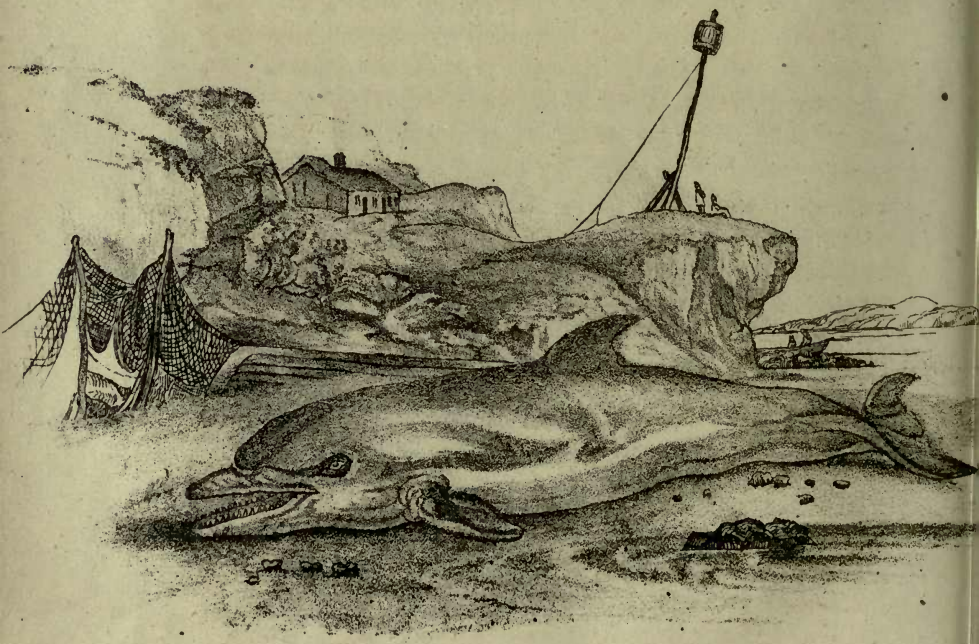
Lacepede, after separating the Delphinapteræ, introduced eleven species into his history; and Cuvier, after withdrawing the porpoises likewise, and introducing other improvements into the classification, reduced the number of living species, established in 1823, to five. Though the old genus Delphinus has now been broken down into no less than nine subdivisions, and there are many species in these, yet in the genus of proper Dolphins the number of species already amounts to nearly twenty, and it is the opinion of those most conversant with the subject, that this forms but a small proportion of the existing varieties.

The general features which distinguish the Dolphins are few and simple. Their snout is considerably elongated broad at the base, round at the extremity, resembling considerably a goose's bill, whence they derive their common appellation. The beak is always flattened transversely largest at its posterior parts, and both jaws are supplied with many and sharp teeth; it is also separated from the forehead by a distinct groove. The dorsal fin is always single.

It used to be held that the Common Dolphin was an inhabitant of every sea throughout the world. This appeared the more credible, since the strength of the animals, and the velocity of their swimming, exceeding that of a ship in full sail, would readily account for their appearance in all seas, and even at the opposite poles. A very different opinion, however, is now gaining ground, confirmatory of a sentiment of Buffon's in relation to land animals, viz., that every species has its distinct locality, and this circumscribed within rather narrow limits. It is more difficult o



PERNETTYS DOLPHIN.



COMMON DOLPHIN

course to ascertain the truth of this proposition as it regards the inhabitants of the water than of the land, and yet many facts go to establish its truth with regard to the Cetacea. Much, however, remains to be done on this and other points, ere we arrive at a perfect natural history of the order.

The Common Dolphin is perhaps better known as the fictitious creature of unrestrained imagination and of heroic poetry, than the sober Goose of the Sea. It is uniformly considered as the Dolphin of antiquity; the original whence were produced those fantastic beings, endowed with all those extraordinary attributes and charms with which it was clothed. It is the *Hieros Ichthys*, or sacred Fish of the Greeks, to which they originally paid divine honors, and which they afterwards embellished with all the illusions of unbridled fancy. It was also sacred to their god Apollo; the reason assigned for which is, that when Apollo appeared to the Cretans, and obliged them to settle on the coast of Delphis, where he founded that oracle so famous throughout antiquity, he did so under the form of a Dolphin. Apollo was thus, according to Visconti, adored not only in connexion with the Delphine province, but the Delphinus fish. He was worshipped at Delphi with Dolphins for his symbols. The ancients respected the Dolphin as a benefactor of mankind; they cherished the tale of Phalantus, the founder of Tarentum, being carried on shore by a Dolphin when wrecked on the coast of Italy; and the story of the musician Arion, who, when about to be thrown overboard by the sailors that they might possess themselves of his wealth, begged that he might be permitted to play some melodious tune, and then threw himself into the sea; upon which one of the many Dolphins which had been attracted by the music, carried him on its back safe to Tanarus; or rather, perhaps, according to Ovid,

> Secure he sits, and with harmonious strains
> Requites his bearer for his friendly pains.

It is also recorded that the shield and sword of Ulysses bore an image of the Dolphin, and it is certain it is seen in very ancient medals and coins. It very early appeared on the shield of some of the princes of France; it gave a name to a fair province of that empire, and hence a title to the heir-apparent of the crown.

Scarcely less fabulous are those other narratives which have been transmitted on the testimony of the early naturalists. They tell us that the Dolphin made itself familiar with man, and conceived a warm attachment for him. Pliny narrates that in Barbary, near the town of Hippo, a Dolphin used to frequent the shore, and accept of food from any hand which supplied it; it would mix among those who were bathing, would allow them to mount its back, would consign itself with docility to their direction, and obey them with as much celerity as precision. Still more extraordinary is that other tale the ancients relate in illustration of the assertion that the Dolphin was yet more partial to children than to adults. Thus, according to Pliny, in several chronicles it was recorded that a Dolphin which had penetrated the lake of Lucrinus, in Campania, every day received bread from the hand of a child, answering to his call, and transporting him on its back to school on the other side of the lake. This intimacy continued for several years, when, the boy dying, the affectionate Dolphin, overwhelmed with grief, soon sunk under its bereavement.

The Common Dolphin is an inhabitant of the European Seas, of the Atlantic, and Mediterranean. It is more common in the temperate zone than in places that are further south. It is true that other species of this genus frequent the seas of Africa, Asia and America; but it is by no means satisfactorily ascertained that the species now under consideration has this extensive range. The opposite opinion seems to be much more probable. They navigate the waters of the ocean in more or less numerous troops, and their vigorous springs and rapid natation, which is daily observed by

voyagers, has long made them famous. The Common Dolphin has long been peculiarly signalized for these qualities, which, however, it enjoys only in common with the larger number of its congeners, and on these points it does not merit any particular distinction. To swim with the rapidity of an arrow, to shoot ahead of vessels which are scudding before the breeze, to spring out of the water, and over the waves, are qualifications possessed alike by all the smaller Cetacea which live in troops in the ocean.

The next Dolphin we present to the notice of the reader is that of the Benedictin Pernetty.

On the 30th of October, the vessel of Bougainville, in which Pernetty sailed, being near the Cape de Verd Islands, was surrounded by about a hundred Dolphins, which approached very near them. "They appeared," says Pernetty, "to have come only for the purpose of amusing us; they made extraordinary leaps out of the water; many of these in their capering vaulted four feet high, and turned over two or three times in the air."

One of these Dolphins, which was taken, weighed a hundred pounds; its beak was slender, and covered with a thick and grayish skin. "I think," says the author, "it was of that species which is named the *Monk of the Sea*, for the anterior part of the head terminated in a hood near the root of the muzzle, and there presented something like the edge of a cloak: the back was black, and the abdomen of a pearl-gray color, verging to yellowish, dappled with spots, some black, and others of an iron-gray color: the teeth were sharp, white, and in the form of those of the pike." To these peculiar characters, Pernetty adds those which are common to all the genus, and subjoins one which, we believe, is often referred to by many of them, viz: they exhale an odor which is so strong and penetrating, that whatever substance is impregnated with it, retains its for many days, in spite of all that can be done to overcome it.

As furnishing a lively sketch of the habits of the whole genus, we subjoin an account of a hunt of flying-fish, as narrated by an eye witness, a fair and interesting journalist. "The other morning a large Dolphin, which had been following the ship for some distance, and was sparkling most gloriously in the sun, suddenly detected a shoal of flying-fish rising from the sea, at some distance. With the rapidity of lightning he wheeled round, made one tremendous leap, and so timed his fall as to arrive fairly at the place where our little friends, the flying-fish, were forced to drop into the sea to refresh their weary wing. A flight of sea-gulls now joined in the pursuit; we gave up our *proteges* for lost, when to our great joy we beheld them rising again, for they had merely skimmed the wave, and thus recruited, continued their flight. Their restless foe pursued them with giant strides, now cutting the wave, which flashed and sparkled with the reflection of his brilliant coat, and then giving one huge leap, which brought him up with his prey; they seemed conscious that escape was impossible; their flight became shorter and more flurried, whilst the Dolphin, animated by the certain prospect of success, grew more vigorous in his bounds: exhausted, they dropped their wings, and fell, one by one, into the jaws of the Dolphin, or were snapped up by the vigilant gulls.

ROBIN.

Turdus migratorius.—Linnæus.

PLATE XXVIII. THE ROBIN.

The Robin goes by several names at Hudson's Bay; some people calling him the red-bird; some the black-bird; and others the American Fieldfare. They inhabit the whole of North America, from Hudson's Bay to Nootka Sound, and as far south as Georgia.

Not only the plumage of the Robin, and of many other birds, is subject to slight periodical changes of color, but even the legs, feet, and bill: the latter, in the male, being frequently found tipt and ridged for half its length with black. In the depth of winter their plumage is generally best, at which time the full grown bird, in his most perfect dress, appears as exhibited in the plate.

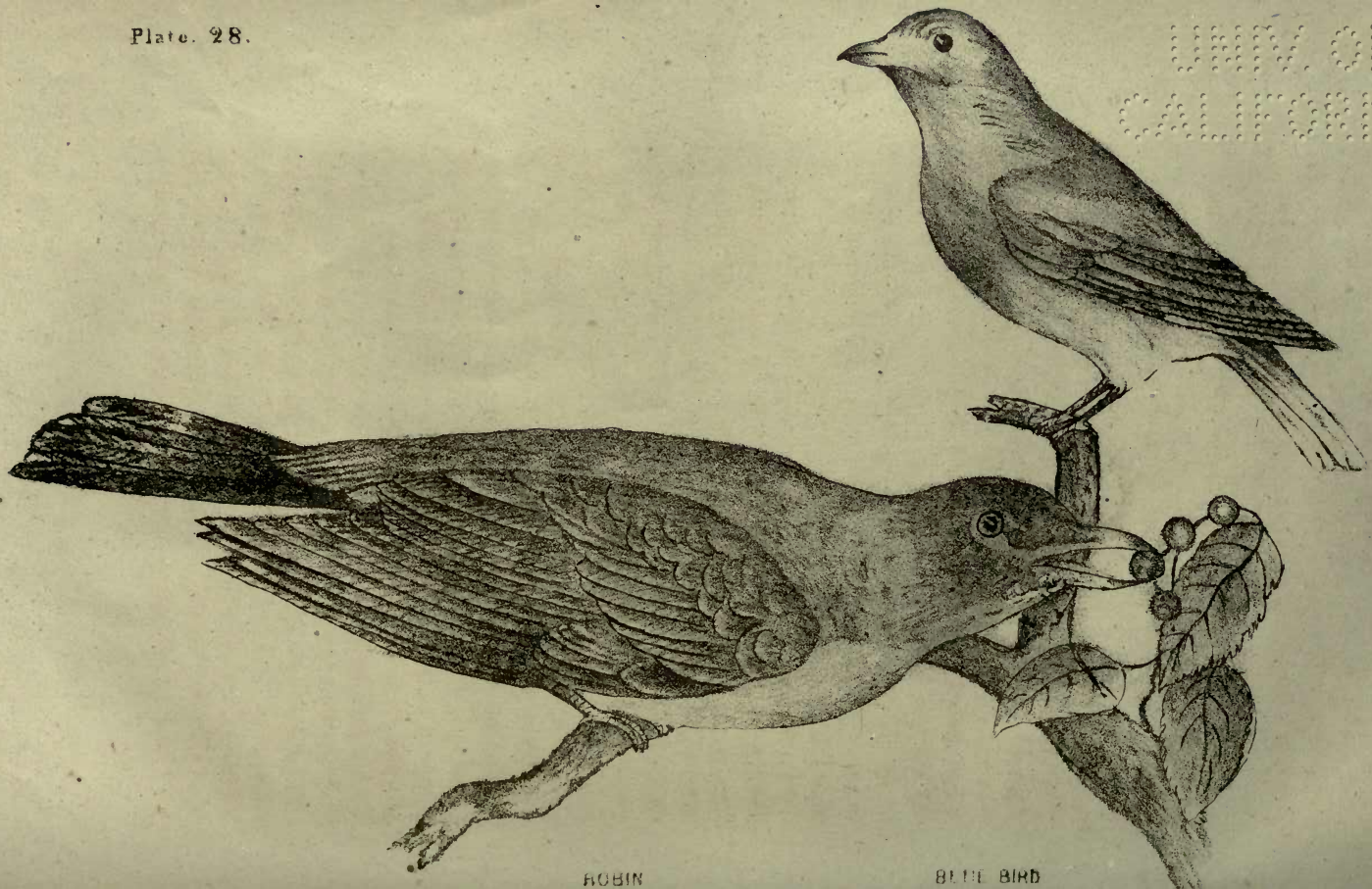
This well known bird is familiar to almost every body. Innumerable thousands of them are seen in the lower parts of the whole Atlantic states, from New Hampshire to Carolina. They migrate to avoid the deep snows, from north to south, from west to east. The Robin builds a large nest on an apple tree, plasters it with mud, and lines it with fine grass. His principal food is worms, berries and caterpillars. When berries fail, they disperse themselves over the fields, and along the fences, in search of worms and other insects.

The Robin is one of our earliest songsters: even in March, while snow yet dapples the field, some few will mount a post or stake of the fence, and make short and frequent attempts at a song. His notes, in spring, are universally known, and as universally beloved. They are, as it were, the prelude to the grand general concert that is about to burst upon us, from woods, fields, and thickets,

whitened with blossoms, and breathing fragrance. By the usual association of ideas, we therefore listen with more pleasure to this cheerful bird, than to many others of far superior powers, and much greater variety. Even his nest is held more sacred among school-boys than that of some others; and while they will exult in plundering a Jay's or a Cat-Bird's, a general sentiment of respect prevails on the discovery of a Robin's. He possesses much suavity of manners; and almost always seeks shelter for his young in summer, and subsistence for himself in the extremes of winter, near the habitations of man.

They generally suffer severely in moulting time, yet often live to a considerable age. A lady who resides near Tarrytown, on the banks of the Hudson, raised and kept one of these birds for seventeen years; which sung as well, and looked as sprightly at that age as ever: but was at last unfortunately destroyed by a cat. The morning is their favorite time for song. In passing through the streets of our large cities, on Sunday, in the months of April and May, a little after day-break, the general silence which usually prevails without at that hour, will enable you to distinguish every house where one of these songsters resides as he makes it then ring with his music.

Plate. 28.



ROBIN

BLUE BIRD

BLUE BIRD.

S. Sialis.

PLATE XXVIII. THE BLUE BIRD.

THE pleasing manners and sociable disposition of this little bird entitle him to particular notice. As one of our first messengers of spring, bringing the charming tidings to our very doors, he bears his own recommendation always along with him, and meets with a hearty welcome from every body.

Though generally considered a bird of passage, yet so early as the middle of February, if the weather be open, he usually makes his appearance about his old haunts, the barn, orchard and fence posts. Storms and deep snows sometimes succeeding, he disappears for a time; but about the middle of March is again seen, accompanied by his mate, visiting the box in the garden, or the hole in the old apple-tree, the cradle of some generations of his ancestors. "When he first begins his amours," says a curious and correct observer, "it is pleasing to behold his courtship, his solicitude to please and to secure the favor of his beloved female. He uses the tenderest expressions, sits close by her, caresses and sings to her his most endearing warblings. When seated together, if he espies an insect delicious to her taste, he takes it up, flies with it to her, spreads his wings over her, and puts it in her mouth." If a rival makes his appearance, (for they are ardent in their loves,) he quits her in a moment, attacks and pursues the intruder, as he shifts from place to place, in tones that bespeak the jealousy of his affection, conducts him with many reproofs beyond the extremities of his territory, and returns to warble out his triumph beside his beloved mate. The preliminaries being thus settled, and the spot fixed on,

they begin to clean out the old nest, and the rubbish of the former year, and to prepare for the reception of their future offspring.

The usual spring and summer song of the Blue-bird is a soft, agreeable and oft-repeated warble, uttered with open quivering wings, and is extremely pleasing. In his motions and general character, he has great resemblance to the Robin Red-breast of Britain ; and had he the brown olive of that bird instead of his own blue, could scarcely be distinguished from him. Like him, he is known to almost every child ; and shows as much confidence in man by associating with him in summer, as the other by his familiarity in winter. He is also of a mild and peaceful disposition, seldom fighting or quarrelling with other birds. His society is courted by the inhabitants of the country, and few farmers neglect to provide for him, in some suitable place, a snug little summer house, ready fitted and rent free. For this he more than sufficiently repays them by the cheerfulness of his song, and the multitude of injurious insects which he daily destroys. Towards fall, that is, in the month of October, his song changes to a single plaintive note, as he passes over the yellow, many-colored woods ; and its melancholy air recalls to our minds the approaching decay of the face of nature. Even after the trees are stript of their leaves, he still lingers over his native fields, as if loath to leave them. About the middle or end of November, few or none of them are seen ; but with every return of mild and open weather, we hear his plaintive note amid the fields, or in the air, seeming to deplore the devastations of winter. Indeed he appears scarcely ever totally to forsake us ; but to follow fair weather through all its journeyings till the return of spring.

The Blue-bird, in summer and fall, is fond of frequenting open pasture fields, and there perching on the stalks of the great mullen, to look out for passing insects. A

whole family of them are often seen, thus situated, as if receiving lessons of dexterity from their more expert parents, who can espy a beetle crawling among the grass at a considerable distance, and after feeding on it, instantly resume their former position. But whoever informed Dr. Latham that "this bird is never seen on trees, though it makes its nest in the holes of them!" might as well have said that the Americans are never seen in the streets, though they build their houses by the sides of them. For what is there in the construction of the feet and claws of this bird to prevent it from perching? Or what sight more common to an inhabitant of this country than the Blue-bird, perched on the top of a peach or apple-tree; or among the branches of those reverend, broad-armed chestnut trees, that stand alone in the middle of our fields, bleached by the rains and blasts of ages?

The Blue-bird is six inches and three quarters in length, the wings remarkably full and broad; the whole upper parts are of a rich sky blue, with purple reflections; the bill and legs are black; inside of the mouth and soles of the feet, yellow, resembling the color of a ripe persimmon; the shafts of all the wing and tail feathers are black; throat, neck, breast, and sides partially under the wings, chestnut; wings, dusky black at the tips; belly white; sometimes the secondaries are exteriorly light brown; the bird in that case has not arrived at full color. The female is easily distinguished by the duller cast of the back, the plumage of which is skirted with light brown, and by the red on the breast being much fainter, and not descending near so low as in the male; the secondaries are also more dusky. This species is found over the whole United States; in the Bahama Islands, where many of them winter, as also in Mexico, Brazil, and Guana.

As the Blue-bird is so regularly seen in winter, after the continuance of a few days of mild and open weather, it has given rise to various conjectures as to the place of his

retreat. Some supposing it to be in close sheltered thickets, lying to the sun; others the neighborhood of the sea, where the air is supposed to be more temperate, and where the matters thrown up by the waves furnish him with a constant and plentiful supply of food. Others trace him to the dark recesses of hollow trees, and subterraneous caverns, where they suppose he dozes away the winter, making, like Robinson Crusoe, occasional reconnoitering excursions from his castle, whenever the weather happens to be favorable. But amid the snows and severities of winter, I have sought for him in vain in the most sheltered situations of the Middle States; and not only in the neighborhood of the sea, but on both sides of the mountains. I have never, indeed, explored the depths of caverns in search of him, because I would as soon expect to meet with tulips and butterflies there, as Blue-birds; but among hundreds of woodmen, who have cut down trees at all seasons, I have never heard one instance of these birds being found so immured in winter; while in the whole of the Middle and Eastern States, the same general observation seems to prevail that the Blue-bird always makes his appearance in winter, after a few days of mild weather. On the other hand, they are said to be numerous in the woods of North and South Carolina, in the depth of winter, and gentlemen of respectability, who have resided in the islands of Jamaica, Cuba, and the Bahamas and Bermudas, say that this very bird is common there in winter. We also find from the works of Hernandez Piso, and others, that it is well known in Mexico, Guana, and Brazil; and if so, the place of its winter retreat is easily ascertained, without having recourse to all the trumpery of holes and caverns, torpidity hybernation, and such ridiculous improbabilities.

A COMPARISON OF ANIMALS
WITH THE INFERIOR RANKS OF CREATION.

Animals are endowed with powers of motion and defence. The greatest part are capable, by changing place, of commanding nature; and of thus obliging her to furnish that nourishment which is most agreeable to their state. Those few that are fixed to one spot, even in this seemingly helpless situation, are, nevertheless, protected from external injury by a hard shelly covering, which they often can close at pleasure, and thus defend themselves from every assault. And here, I think, we may draw the line between the animal and vegetable kingdoms. Every animal, by some means or other, finds protection from injury; either from its force, or courage, its swiftness, or cunning. Some are protected by hiding in convenient places; and others by taking refuge in a hard resisting shell. But vegetables are totally unprotected; they are exposed to every assailant, and patiently submissive in every attack. In a word, an animal is an organized being, that is in some measure provided for its own security; a vegetable is destitute of every protection.

But though it is very easy, without the help of definitions, to distinguish a plant from an animal, yet both possess many properties so much alike, that the two kingdoms, as they are called, seem mixed with each other. Hence, it frequently puzzles the naturalist to tell exactly where animal life begins, and vegetative terminates; nor, indeed, is it easy to resolve, whether some objects offered to view be of the lowest of the animal, or the highest of the vegetable races. The sensitive plant, that moves at the touch, seems to have as much perception as the fresh-water polypus, that is possessed of a still slower share of motion. Be-

sides, the sensitive plant will not reproduce upon cutting in pieces, which the polypus is known to do, so that the vegetable production seems to have the superiority. But, notwithstanding this, the polypus hunts for its food, as most other animals do. It changes its situation; and therefore, possesses a power of choosing its food, or retreating from danger. Still, therefore, the animal kingdom is far removed above the vegetable; and its lowest denizen is possessed of very great privileges, when compared with the plants with which it is often surrounded.

However, both classes have many resemblances, by which they are raised above the unorganized and inert masses of nature. Minerals are mere inactive, insensible bodies, entirely motionless of themselves, and waiting some external force to alter their forms, or their properties. But it is otherwise with animals and vegetables; these are endued with life and vigor, they have their state of improvement and decay; they are capable of reproducing their kinds; they grow from seeds in some, and from cuttings in others; they seem all possessed of sensation, in a greater or less degree; they both have their enmities and affections; and as some animals are by nature impelled to violence, so some plants are found to exterminate all others, and make a wilderness of the places round them. As a lion makes a desert of the forests where it resides, thus no other plant will grow under the shade of the manchineel-tree. Thus, also, that plant in the West Indies called caraguata, clings round whatever tree it happens to approach; there it quickly gains the ascendant, and loading the tree with a verdure not its own, keeps away that nourishment designed to feed the trunk; and, at last, entirely destroys its supporter. As all animals are ultimately supported upon vegetables, so vegetables are greatly propagated by being made a part of animal food. Birds distribute the seeds wherever they fly, and quadrupeds prune them into greater luxuriance. By these means the

quantity of food, in a state of nature, is kept equal to the number of the consumers; and, lest some of the weaker ranks of animals should find nothing for their support, but all the provisions be devoured by the strong, different vegetables are appropriated to different appetites. If, transgressing this rule, the stronger ranks should invade the rights of the weak, and, breaking through all regard to appetite, should make an indiscriminate use of every vegetable, nature then punishes the transgression, and poison marks the crime as capital.

If, again, we compare vegetables and animals with respect to the places where they are found, we shall find them bearing a still stronger similitude. The vegetables that grow in a dry and sunny soil, are strong and vigorous, though not luxuriant; so, also, are the animals of such a climate. Those, on the contrary, that are the joint product of heat and moisture, are luxuriant and tender; and the animals assimilating to the vegetable food, on which they ultimately subsist, are much larger in such places than in others. Thus, in the internal parts of South America and Africa, where the sun usually scorches all above, while inundations cover all below, the insects, reptiles, and other animals, grow to a prodigious size: the earth-worm of America is often a yard in length, and as thick as a walking-cane; the boiguacu, which is the largest of the serpent kind, is sometimes forty feet in length; the bats in those countries are as big as a rabbit; the toads are bigger than a duck; and their spiders are as large as a sparrow. On the contrary, in the cold, frozen regions of the north, where vegetable nature is stinted of its growth, the few animals in those climates partake of the diminution; all the wild animals, except the bear, are much smaller than in milder countries; and such of the domestic kinds as are carried thither, quickly degenerate, and grow less. Their very insects are of the minute

kinds, their bees and spiders being not half so large as those in the temperate zone.

The similitude between vegetables and animals is nowhere more obvious than in those that belong to the ocean, where the nature of one is admirably adapted to the necessities of the other. This element, it is well-known, has its vegetables, and its insects that feed upon them in great abundance. Over many tracts of the sea, a weed is seen floating, which covers the surface, and gives the resemblance of a green and extensive meadow. On the under side of these unstable plants, millions of little animals are found, adapted to their situation. For, as their ground, if I may so express it, lies over their heads, their feet are placed upon their backs; and, as land animals have their legs below their bodies, these have them above. At land also, most animals are furnished with eyes to see their food; but at sea, almost all the reptile kinds are without eyes, which might only give them prospects of danger, at a time when unprovided with the means of escaping it.

Thus, in all places, we perceive an obvious similitude between the animals and the vegetables of every region. In general, however, the most perfect races have the least similitude to the vegetable productions on which they are ultimately fed; while, on the contrary, the meaner the animal, the more local it is found to be, and the more it is influenced by the varieties of the soil where it resides. Many of the more humble reptile kinds are not only confined to one country, but also to a plant; nay, even to a leaf. Upon that they subsist; increase with its vegetation, and seem to decay as it declines. They are merely the circumscribed inhabitants of a single vegetable; take them from that, and they instantly die; being entirely assimilated to the plant they feed on, assuming its color, and even its medicinal properties. For this reason, there are infinite numbers of the meaner animals that we have never

an opportunity of seeing in this part of the world ; they are incapable of living separate from their kindred vegetables, which grow only in a certain climate.

Such animals as are formed more perfect, lead a life of less dependence ; and some kinds are found to subsist in many parts of the world at the same time. But, of all the races of animated nature, man is the least affected by the soil where he resides, and least influenced by the variations of vegetable sustenance : equally unaffected by the luxuriance of the warm climates, or the sterility of the poles, he has spread his habitations over the whole earth ; and finds subsistence as well amidst the ice of the north, as the burning deserts under the Line. All creatures of an inferior nature, as has been said, have peculiar propensities to peculiar climates ; they are circumscribed to zones, and confined to territories, where their proper food is found in the greatest abundance ; but man may be called the animal of every climate, and suffers but very gradual alterations from the nature of any situation.

As to animals of a meaner rank, whom man compels to attend him in his migrations, these being obliged to live in a kind of constraint, and upon vegetable food, often different from that of their native soil, they very soon alter their natures with the nature of their nourishment, assimilate to the vegetables upon which they are fed, and thus assume very different habits as well as appearances. Thus, man, unaffected himself, alters and directs the nature of other animals at his pleasure ; increases their strength for his delight, or their patience for his necessities.

This power of altering the appearances of things, seems to have been given him for very wise purposes. The Deity, when he made the earth, was willing to give his favored creature many opponents, that might at once exercise his virtues, and call forth his latent abilities. Hence, we find in those wide uncultivated wildernesses, where man, in his savage state, owns inferior strength, and the beasts

claim divided dominion, that the whole forest swarms with noxious animals and vegetables; animals as yet undescribed, and vegetables which want a name. In those recesses, nature seems rather lavish than magnificent in be stowing life. The trees are usually of the largest kinds, covered round with parasite plants, and interwoven at the tops with each other. The boughs, both above and below, are peopled with various generations; some of which have never been upon the ground, and others have never stirred from the branches on which they were produced. In this manner, millions of minute and loathsome creatures pursue a round of uninterrupted existence, and enjoy a life scarcely superior to vegetation. At the same time, the vegetables in those places are of the larger kinds, while the animal race is of the smaller. But man has altered this disposition of nature; having, in a great measure, levelled the extensive forests, cultivated the softer and finer vegetables, destroyed the numberless tribes of minute and noxious animals, and taken every method to increase a numerous breed of the larger kinds. He thus has exercised a severe control; unpeopled nature, to embellish it; and diminished the size of the vegetable, in order to improve that of the animal kingdom.

To subdue the earth to his own use, was, and ought to be, the aim of man; which was only to be done by increasing the number of plants, and diminishing that of animals; to multiply existence, *alone* was that of the Deity. For this reason, we find, in a state of nature, that animal life is increased to the greatest quantity possible; and we can scarcely form a system that could add to its numbers. First, plants or trees are provided by nature, of the largest kinds; and, consequently, the nourishing surface is thus extended. In the second place, there are animals peculiar to every part of the vegetable, so that no part of it is lost. But the greatest possible increase of life would still be deficient, were there not other animals that lived

upon animals; and these are themselves, in turn, food for some other greater and stronger set of creatures. Were all animals to live upon vegetables alone, thousands would be extinct that now have existence, as the quantity of their provision would shortly fail. But, as things are wisely constituted, one animal now supports another; and thus, all take up less room than they would by living on the same food; as, to make use of a similar instance, a greater number of people may be crowded into the same space, if each is made to bear his fellow upon his shoulders.

To diminish the number of animals, and increase that of vegetables, has been the general scope of human industry; and, if we compare the utility of the kinds, with respect to man, we shall find, that of the vast variety in the animal kingdom, but very few are serviceable to him; and, in the vegetable, but very few are entirely noxious. How small a part of the insect tribes, for instance, are beneficial to mankind, and what numbers are injurious! In some countries they almost darken the air: a candle cannot be lighted without their instantly flying upon it, and putting out the flame. The closest recesses are no safeguard from their annoyance; and the most beautiful landscapes of Nature only serve to invite their rapacity. As these are injurious, from their multitudes, so most of the larger kinds are equally dreadful to him, from their courage and ferocity. In the most uncultivated parts of the forest, these maintain an undisputed empire; and man invades their retreats with terror. These are dreadful; and there are still more which are utterly useless to him, that serve to take up the room which more beneficial creatures might possess; and incommode him rather with their numbers than their enmities. Thus, in a catalogue of land animals, that amounts to more than twenty thousand, we can scarcely reckon up a hundred that are any way useful to him; the rest being either all his open or his secret enemies,

immediately attacking him in person, or intruding upon that food he has appropriated to himself. Vegetables, on the contrary, though existing in greater variety, are but few of them noxious. The most deadly poisons are often of great use in medicine; and even those plants that only seem to cumber the ground, serve for food to that race of animals which he has taken into friendship or protection. The smaller tribes of vegetables, in particular, are cultivated, as contributing either to his necessities or amusement; so that vegetable life is as much promoted by human industry, as animal life is controlled and diminished.

Hence, it was not without a long struggle, and various combinations of experience and art, that man acquired his present dominion. Almost every good that he possesses was the result of the contest; for, every day, as he was contending, he was growing more wise; and patience and fortitude were the fruits of his industry.

Hence, also, we see the necessity of some animals living upon each other, to fill up the plan of Providence; and we may consequently infer the expediency of man's living upon all. Both animals and vegetables seem equally fitted to his appetites; and were any religious or moral motives to restrain him from taking away life, upon any account, he would only thus give existence to a variety of beings made to prey upon each other; and, instead of preventing, multiply mutual destruction.

No. 29.

UNIV. OF CALIFORNIA

Antelopes.

ANTELOPE.

Antilope cervicapra.—Desm.

PLATE XXIX.—THE ANTELOPE.

In size it is rather smaller than the fallow deer. Its color is a dusky brown, mixed with red; the belly, breast, and inside of the limbs, are white; and on the head, back, and outside of the limbs, the hair is darker than on any other part; the orbits of the eyes are white, and there is a small patch of the same color on each side of the forehead; the tail is short. The horns, which are about sixteen inches long, are black, distinctly annulated almost to the top, and have three curves; the *brachia*, or sides of the lyre, were frequently made of these horns, as appears from ancient gems. The female is destitute of horns, and may also be known by a white stripe on the flanks.

The race of antelopes is famous for the concretion known by the name of *bezoar*. This word is supposed to be derived from the Arabic language, where it signifies antidote or counter-poison. It is found in the stomach and intestines of many animals, and brought over principally from the East Indies. Like all other animal concretions, it is found to have a kind of nucleus, or hard substance within, upon which the external coatings are formed; for, upon being sawn through, it seems to have layer over layer, as an onion.

This nucleus is of various kinds; sometimes the buds of a shrub, sometimes pieces of flint, stones of plums, tamarinds, seeds of cassia, and sometimes a marcasite. The stone itself varies from the size of an acorn to that of a pigeon's egg; and the larger it is, the more valuable it is reckoned—its price increasing like that of a diamond.

There was a time when a stone of this kind, weighing four ounces, sold in Europe for above two hundred pounds; but at present the price is greatly fallen, and they are in very little esteem. The bezoar is of various colors, sometimes of a blood color, sometimes of a pale yellow, and of all the shades between these two. It is generally glossy, smooth, and has a fragrant smell, like that of ambergris. It has been given in vertigoes, epilepsies, palpitations of the heart, colic, and jaundice; and in those places where the dearness, and not the value of medicines is consulted, in almost every disorder incident to man. In all cases it is perhaps equally efficacious, acting only as an absorbent power, and possessing virtues not superior to common chalk, or crabs' claws. Judicious physicians have, therefore, discarded it; and this celebrated medicine is now chiefly consumed in countries where the knowledge of nature has been but little advanced. When this medicine was in its highest reputation, many arts were used to adulterate it; and many countries endeavored to find out a bezoar of their own.

These animals inhabit all the deserts from the Danube and Dnieper to the river Irtish, but not beyond; they are, therefore, found in Poland, Moldavia, about Mount Caucasus and the Caspian Sea, and in Siberia, in the dreary open deserts, where salt springs abound, feeding on the salt, and the acrid and aromatic plants of those countries. They rarely all lie down at the same time, but by a providential instinct, some are always keeping watch; and when they are tired, they seemingly give notice to those which have taken their rest, who instantly arise and relieve the sentinels of the preceding hours; and thus they often preserve themselves from the attacks of wolves and huntsmen. They are exceedingly swift, and will outrun the fleetest horse or greyhound; yet, partly through timidity, and partly on account of the shortness of their breath, they very soon become the prey of the hunter. If

they are but bitten by a dog, they instantly fall down; nor will they even offer to rise again. They are sometimes shot by the hunter; and are also taken by the black eagle, which is trained for that purpose. In summer they are almost purblind, which is another cause of their destruction. This is occasioned by the heat of the sun, and the splendor of the yellow deserts, where they live in a wild state. They seem to have no voice, yet when brought up tame, the young utter a short kind of bleating, like the sheep.

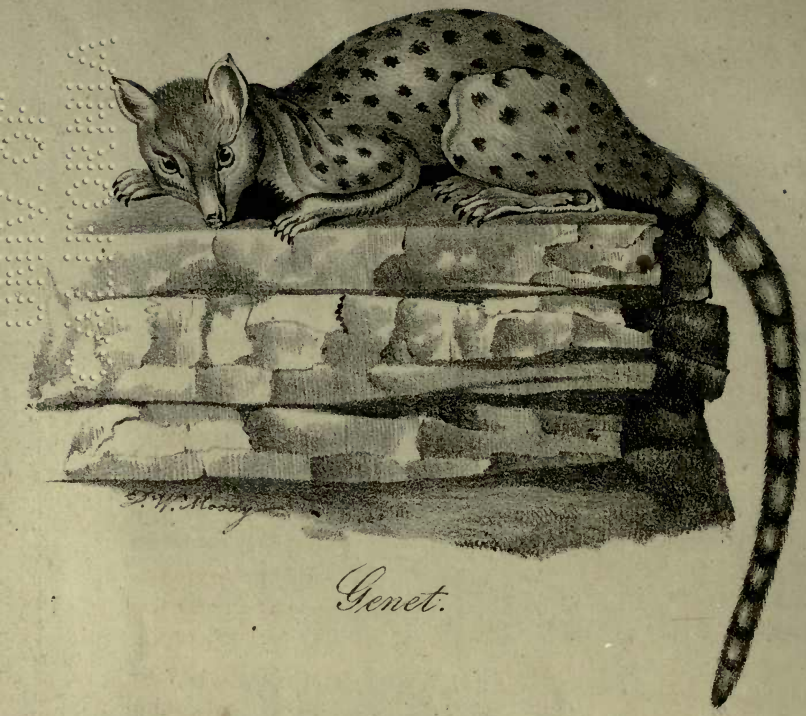
Another animal belonging to this group, has been named by Major Smith, *A. adenota*, from the circumstance of its having a small gland or tubercle on the loins, about equidistant between the hips and the root of the tail. Major Smith does not, however, surmise what purpose this would serve. The specimens to which the name was applied, were part of the collection in Exeter Change, and stood about twenty-six inches high. The general color a fulvous bay. The belly and inside of the limbs white. They were brought from the west coast of Africa.

The Saiga, *A. colus*, Smith, is a European animal very little known. The collections of Petersburg and Vienna, according to Major Smith, being the only museums, in 1827, where entire specimens of this animal were preserved. It is a large animal, nearly equal to the size of the fallow-deer, but more clumsily made; the horns intermediate between the lyrate form and the twisted appearance of the common Antelope. The color in summer a gray dun, with a dark stripe down the back. The under parts whitish. It is found on the shores of the Danube, the Carpathian range, Caucasian Mountains, and the Altaic Chain. It is migratory, and said to assemble in troops of ten thousand (singular that our information is so scanty regarding them.) It is also said to be easily tamed, and become gentle. The horns are used by the Chinese for their lanterns.

The last animal, but that most typical of the group, is the Common Antelope, *A cervicapra*. A native of India, and celebrated for the religious superstition in which it is held by the natives, being consecrated to some of their deities, and alone permitted to be eaten in some of the religious ceremonies of the Brahmins. It is found abundantly over the whole Indian Peninsula, and is extremely graceful and swift. "It is pleasing to see a herd of antelopes, consisting perhaps of fifty or sixty does, and led by a fine dark-colored buck, bounding over a plain. The height and distance taken at each bound, is wonderful; they often vault at least twelve feet high, and over twenty-five or thirty feet of ground. It is folly to slip greyhounds after Antelopes. Instances have been known of their being run down, but few dogs have survived the exertion."

"The best method of shooting Antelopes, is to get a pair of very quiet bullocks, and walk between them, under the guidance of a native, who should hold a plough. The antelopes, to whom this sight is perfectly familiar, will, by this device, await with seeming confidence, and enable the sportsman to approach sufficiently near to get a good shot."

The young are of a pale fulvous color, which darkens with age to a sepia brown, sometimes to deep black, the centre of the flank becoming darker, and showing a streak, as in some of the gazelles. The lower parts and insides of the legs are white, and the nose, around the orbits and the throat, is often of the same color. The horns are spirally twisted, and are sometimes two feet in length.



Genet.

Civet.

THE CIVET.

Viverra Civetta.—Linnæus.

PLATE XXX. THE CIVET.

The Civet is from two to three feet in length, stands from ten to twelve inches high, and has a tail half the length of its body. The hair is long, and the ground color of it is a brownish gray, interspersed with numerous transverse, interrupted bands or irregular spots of black. Along the centre of the back, from between the shoulders to the end of the tail, is a kind of mane, which can be erected or depressed as the animal pleases, and which is formed of black hairs, longer than those of the body. The sides of the neck and the upper lip are nearly white. The legs, and the greater part of the tail, are perfectly black; there is a large, black patch round each eye, which passes thence to the corner of the mouth; and two or three bands of the same color stretch obliquely from the base of the ears towards the shoulders and neck, the latter of which is marked with a black patch.

The perfume of the civet is very strong; and though the odor is so strong, it is yet agreeable, even when it issues from the body of the animal. The perfume of the civet we must not confound with musk, which is a sanguineous humor, obtained from an animal altogether different from either the civet or the zibet.

The civets, though natives of the hottest climates of Africa and Asia, are yet capable of living in temperate, and even in cold countries, provided they are carefully defended from the injuries of the air, and provided with delicate and esculent food. In Holland, where no small emolument is derived from their perfume, they are frequently reared. The perfume of Amsterdam is esteemed preferable to that which is brought from the Levant, or the

Indies, which is generally less genuine. That which is imported from Guinea, would be the best of any, were it not that the negroes, as well as the Indians and the people of the Levant, adulterate it with mixtures of laudanum, storax, and other balsamic and odorous drugs.

Those who breed these animals for the sake of their perfume, put them into a long and narrow sort of box, in which they cannot turn. This box the person who is employed to collect the perfume, opens behind, for this purpose, twice or thrice a week; and, dragging the animal which is confined in it, backward by the tail, he keeps it in this position by a bar before. This done, he takes out the civet with a small spoon, carefully scraping with it, all the while, the interior coats of the pouch under the tail, which secretes and contains it. The perfume thus obtained is put into a vessel, and every care is taken to keep it closely shut.

The quantity which a single animal will afford, depends greatly upon its appetite, and the quality of its nourishment. It yields more in proportion as it is more delicately and abundantly fed. Raw flesh hashed small, eggs, rice, small animals, birds, young fowls, and particularly fish, are the food in which the civet most delights.

As to the rest, the civet is a wild, fierce animal, and though sometimes tamed, is yet never thoroughly familiar. Its teeth are strong and sharp; but its claws are feeble and blunt. It is light and active, and lives by prey, pursuing birds, and other small animals, which it is able to overcome. It generally attacks at night, and by surprise. They are sometimes seen stealing into yards and outhouses, like the fox, in order to carry off poultry. Their eyes shine in the night; and it is very probable that they see better by night than by day. When they fail of animal food, they are found to subsist upon roots and fruits. They very seldom drink; and never inhabit humid ground; but prefer the burning sands and arid mountains.

THE GENET.

V. genetta.—Linnæus.

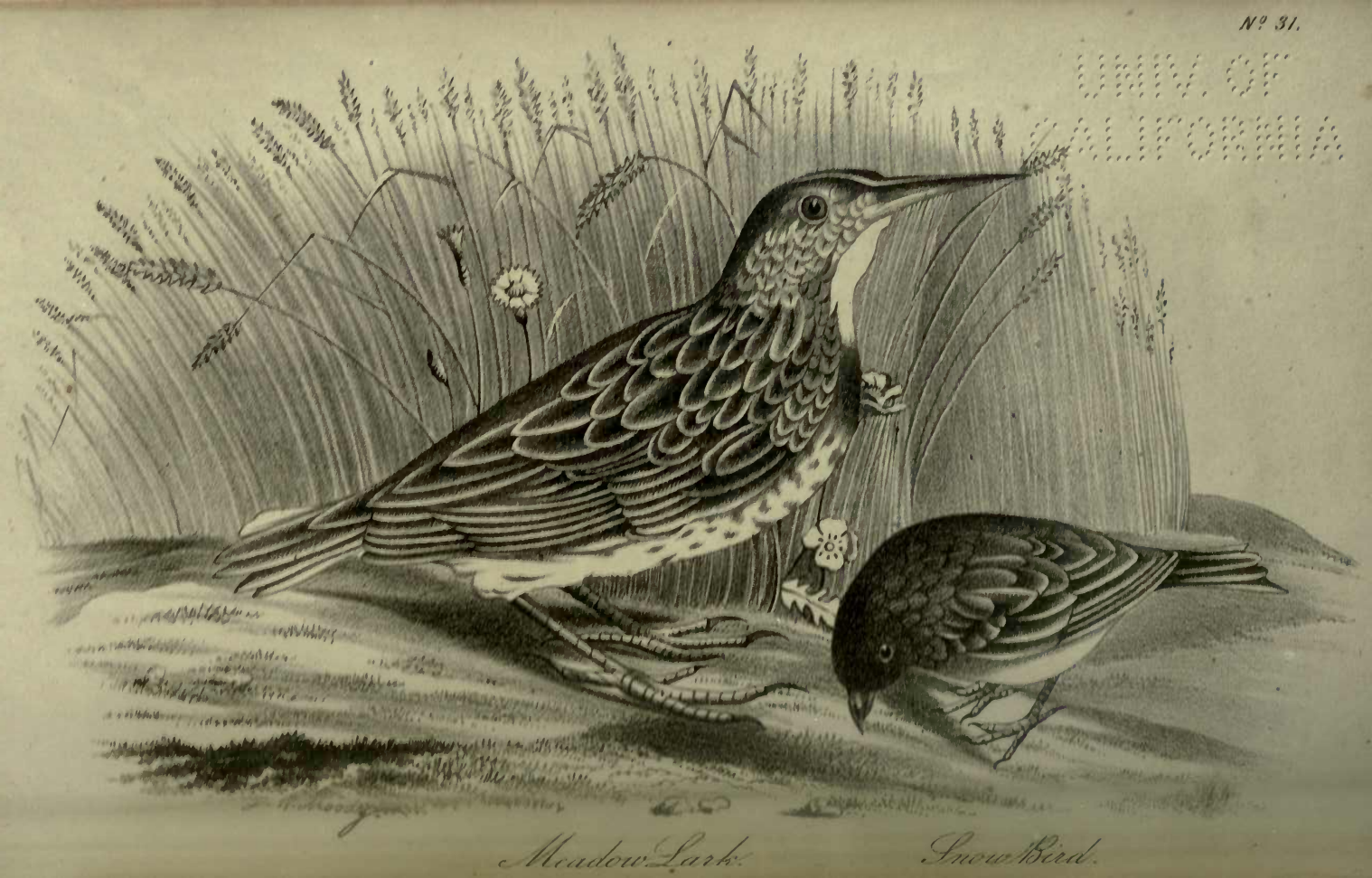
PLATE XXX. THE GENET.

This animal is rather less than the martin ; though there are genets of different sizes, and I have seen one rather larger. It also differs somewhat in the form of its body. It is not easy in words to give an idea of the distinction. It resembles all those of the weasel kind, in its length, compared to its height ; it resembles them in having a soft, beautiful fur, in having its feet armed with claws that cannot be sheathed, and in its appetite for petty carnage. But then it differs from them in having the nose much smaller and longer, rather resembling that of a fox than a weasel. The tail, also, instead of being bushy, tapers to a point, and is much longer; its ears are larger, and its paws smaller. As to its colours and figure in general, the genet is spotted with black, upon a ground mixed with red and gray. It has two sorts of hair, the one shorter and softer, the other longer and stronger, but not above half an inch long on any part of its body except the tail. Its spots are distinct and separate upon the sides, but unite towards the back, and form black stripes, which run longitudinally from the neck backwards. It has also along the back a kind of mane or longish hair, which forms a black streak from the head to the tail, which last is marked with rings, alternately black and white, its whole length.

The genet, like all the rest of the weasel kind, has glands that separate a kind of perfume, resembling civet, but which soon flies off.

It resembles the martin very much in its habits and disposition ; except that it seems tamed much more easily.

Belonius assures us that he has seen them in the houses at Constantinople as tame as cats; and that they were permitted to run everywhere about, without doing the least mischief. For this reason they have been called the *cats of Constantinople;* although they have little else in common with that animal, except their skill in spying out and destroying vermin. Naturalists pretend that it inhabits only the moister grounds, and chiefly resides along the banks of rivers, having never been found in mountains nor dry places. The species is not much diffused; it is not to be found in any part of Europe, except Spain and Turkey; it requires a warm climate to subsist and multiply in; and yet it is not to be found in the warmer regions either of India or Africa. From such as have seen its uses at Constantinople, I learn that it is one of the most beautiful, cleanly, and industrious animals in the world; that it keeps whatever house it is in perfectly free from mice and rats, which cannot endure its smell. Add to this, its nature is mild and gentle, its colors various and glossy, its fur valuable; and upon the whole, it seems to be one of those animals, that, with proper care, might be propagated amongst us, and might become one of the most serviceable of our domestics.



Meadow Lark. Snow Bird.

MEADOW LARK.

Alauda magna.

PLATE XXXI.—THE MEADOW LARK.

Though this well-known species cannot boast of the powers of song which distinguish that "harbinger of day," the Sky Lark of Europe, yet in richness of plumage, as well as in sweetness of voice, (as far as his few notes extend,) he stands eminently its superior. He differs from the greater part of his tribe in wanting the long, straight hind claw, which is probably the reason why he has been classed by some late naturalists with the Starlings. But in the particular form of his bill, in his manners, plumage, mode and place of building his nest, nature has clearly pointed out his proper family.

This species has a very extensive range, and is found in Upper Canada, and in each of the states from New Hampshire to New Orleans. Mr. Bartram also informs me that they are equally abundant in East Florida. Their favorite places of retreat are pasture fields and meadows, particularly the latter, which have conferred on them their specific name, and no doubt supplies them abundantly with the particular seeds and insects on which they feed. They are rarely or never seen in the depth of the woods; unless where, instead of underwood, the ground is covered with rich grass, as in the Choctaw and Chickasaw countries. The extensive and luxuriant prairies of the West also abound with them.

It is probable that in the more rigorous regions of the north they may be birds of passage, as they are partially so here; though I have seen them among the meadows of New Jersey, and those that border the rivers Delaware and

Schuylkill, in all seasons ; even when the ground was deeply covered with snow. There is scarcely a market day in Philadelphia, from September to March, but they may be found in Market. They are generally considered, for size and delicacy, little inferior to the quail, or what is here usually called the partridge, and valued accordingly. I once met with a few of these birds in the month of February, during a deep snow, among the heights of the Alleghany, between Shippensburgh and Somerset, gleaning on the road, in company with the small snow-birds. In the states of South Carolina and Georgia, at the same season of the year, they swarm among the rice plantations, running about the yards and out-houses, accompanied by the Kildeers, with little appearance of fear, as if quite domesticated.

These birds, after the building season is over, collect in flocks ; but seldom fly in a close, compact body ; their flight is something in the manner of the grouse and partridge ; laborious and steady ; sailing, and renewing the rapid action of the wings alternately. When they alight on trees or bushes, it is generally on the tops of the highest branches, whence they send forth a long, clear, and somewhat melancholy note, that, in sweetness and tenderness of expression, is not surpassed by any of our numerous warblers. This is sometimes followed by a kind of low, rapid chattering, the peculiar call of the female ; and again the clear and plaintive strain is repeated as before. They afford tolerable good amusement to the sportsman, being most easily shot while on wing, as they frequently squat among the long grass, and spring within gunshot. The nest of this species is built generally in, or below, a thick tuft or tussock of grass ; it is composed of dry grass, and fine bent laid at bottom, and wound all round, leaving an arched entrance level with the ground ; the inside is lined with fine stalks of the same materials, disposed with great regularity. The eggs are four, sometimes five, white,

marked with specks, and several large blotches of reddish brown, chiefly at the thick end. Their food consists of caterpillars, grub-worms, beetles, and grass seeds; with a considerable proportion of gravel. Their general name is the *Meadow Lark;* among the Virginians they are usually called the *Old Field Lark.*

The length of this bird is ten inches and a half, extent sixteen and a half; throat, breast, belly, and line from the eye to the nostrils, rich yellow; inside lining and edge of the wing the same; an oblong crescent, of deep velvetty black, ornaments the lower part of the throat; lesser wing-coverts black, broadly bordered with pale ash; rest of the wing feathers light brown, handsomely serrated with black; a line of yellowish white divides the crown, bounded on each side by a stripe of black intermixed with bay, and another line of yellowish white passes over each eye backwards; cheeks bluish white, back and rest of the upper parts beautifully variegated with black, bright bay, and pale ochre; tail wedged, the feathers neatly pointed, the four outer ones on each side, nearly all white; sides, thighs, and vent pale yellow ochre, streaked with black; upper mandible, brown, lower, bluish white; eyelids furnished with strong black hairs; legs and feet very large, and of a pale flesh color.

SNOW-BIRD.

Fringilla Hudsonia.

PLATE XXXI.—THE SNOW-BIRD.

The Snow-bird is six inches long, and nine in extent; the head, neck, and upper parts of the breast, body, and wings, are of a deep slate color; the plumage sometimes skirted with brown, which is the color of the young birds; the lower parts of the breast, the whole belly and vent, are pure white; the three secondary quill feathers next the body are edged with brown, the primaries with white; the tail is dusky slate, a little forked, the two exterior feathers wholly white, which are flirted out as it flies, and appear then very prominent; the bill and legs are of a reddish flesh color; the eye bluish black. The female differs from the male in being considerably more brown. In the depth of winter the slate color of the male becomes more deep and much purer, the brown disappearing nearly altogether.

This well-known species, small and insignificant as it may appear, is by far the most numerous, as well as the most extensively disseminated, of all the feathered tribes that visit us from the frozen regions of the north. Their migrations extending from the arctic circle, and probably beyond it, to the shores of the gulf of Mexico, spreading over the whole breadth of the United States, from the Atlantic Ocean to Louisiana; how much farther westward I am unable to say. About the twentieth of October, they make their first appearance in those parts of Pennsylvania east of the Alleghany mountains. At first they are most generally seen on the borders of woods, among the falling and decayed leaves, in loose flocks of thirty or forty toge-

ther, always taking to the trees when disturbed. As the weather sets in colder, they approach nearer the farm-house and villages; and, on the appearance of what is usually called *falling weather*, assemble in larger flocks, and seem doubly diligent in searching for food. This increased activity is generally a sure prognostic of a storm. When deep snow covers the ground, they become almost half domesticated. They collect about the barn, stables, and other out-houses, spread over the yard, and even round the steps of the door; not only in the country and villages, but in the heart of our large cities; crowding around the threshold early in the morning, gleaning up the crumbs; appearing very lively and familiar. They have also recourse, at this severe season, when the face of the earth is shut up from them, to the seeds of many kinds of weeds, that still rise above the snow, in corners of fields, and low sheltered situations, along the borders of creeks and fences, where they associate with several species of Sparrows. They are at this time easily caught with almost any kind of traps; are generally fat, and it is said, are excellent eating.

A distinguished traveller says, "I cannot but consider this bird as the most numerous of its tribe of any within the United States. From the northern parts of the district of Maine to the Ogechee river in Georgia, a distance, by the circuitous route in which I travelled, of more than 1800 miles, I never passed a day, and scarcely a mile, without seeing numbers of these birds, and frequently large flocks of several thousands. Other travellers, with whom I conversed, who had come from Lexington in Kentucky, through Virginia, also declared that they found these birds numerous along the whole road. It should be observed, that the road sides are their favorite haunts, where many rank weeds that grow along the fences furnish them with food, and the road with gravel. In the vicinity of places where they were most numerous, I observed the small

Hawk, (*Falco sparverius*,) and several others of his tribe, watching their opportunity, or hovering cautiously around, making an occasional sweep among them, and retiring to the bare branches of an old cypress, to feed on their victim. In the month of April, when the weather begins to be warm, they are observed to retreat to the woods; and to prefer the shaded sides of hills and thickets; at which time the males warble out a few very low sweet notes; and are almost perpetually pursuing and fighting with each other. About the twentieth of April they take their leave of our humble regions, and retire to the north, and to the high ranges of the Alleghany, to build their nests, and rear their young. In some of those ranges, in the interior of Virginia, and northward, about the waters of the west branch of the Susquehannah, they breed in great numbers. The nest is fixed in the ground, or among the grass, sometimes several being within a small distance of each other. According to the observations of the gentlemen residing at Hudson's bay factory, they arrive there about the beginning of June, stay a week or two, and proceed farther north to breed. They return to that settlement in the autumn, on their way to the south."

There must be something in the temperature of the blood or constitution of this bird, which unfits it for residing, during summer, in the lower parts of the United States; as the country here abounds with a great variety of food, of which, during its stay here, it appears to be remarkably fond. Or, perhaps, its habit of associating in such numbers to breed, and building its nest with so little precaution, may, to insure its safety, require a solitary region, far from the intruding footsteps of man.

No. 32.

The Great Sea-Serpent.

THE GREAT SEA-SERPENT.

Scoliophis Atlanticus?—Lin. Soc. of Boston.

PLATE XXXII. THE SEA-SERPENT.

We have but very obscure intimation of what these monsters really were; they were not true or common fish, but were reputed to be prodigious animals, whose form and nature were imperfectly understood; and which were peculiarly the objects of vulgar wonder and superstitious dread. Now, it so happens that, even at the present day, it is asserted that such monsters exist, whose characters all the assiduity of Naturalists has not hitherto satisfactorily ascertained.

That much fable and exaggeration have been mixed up with the history of the Great Sea-Serpent, cannot be doubted; still, however, the inquiry recurs, what portion of the truth is involved amidst this error?

We turn, first, to an account of an animal which apparently belonged to this class, which was stranded in the Island of Stronsa, one of the Orkneys, in the year 1808, and which was first seen entire, and measured by respectable individuals, and afterwards when dead, and broken in pieces by the violence of the waves, was again examined by many; portions of it being secured, such as the skull, and upper bones of the swimming paws, by Mr. Laing, a neighboring proprietor; and other portions, such as the vertebræ, by being deposited and beautifully preserved in the Royal Museum of the University of Edinburgh, and in the Museum of the Royal College of Surgeons. An able paper on these latter fragments, and on the wreck of the animal, was read by the late Dr. Barclay to the Wernerian Society, and will be found in Vol. I. of its Transactions.

We can allow space only for a very short abridgment of these documents, which, be it remembered, furnish an account of the animal principally after it had been mutilated; and hence we cannot wonder if the original accounts are both imperfect and contradictory. It measured fifty-six feet in length, and twelve in circumference. The head was small, not being a foot in length, from the snout to the first vertebræ; the neck was slender, extending to the length of fifteen feet. All the accounts agree in assigning it blow-holes, though they differ as to their precise situation. On the shoulders something like a bristly mane commenced, which extended to near the extremity of the tail. It had three pairs of fins or paws connected with the body; the anterior were the largest, measuring more than four feet in length, and their extremities were somewhat like toes, partially webbed. Probably the sketch is particularly defective respecting these. Dr. Fleming, in his notice of this animal, suggests that these members were probably the remains of pectoral, ventral, and caudal fins. The skin was smooth, without scales, and of a grayish color; and the flesh appeared like coarse ill-colored beef. The eye was of the size of the Seal's; the throat was too narrow to admit the hand.

We shall next allude to the unvarnished account recently given, of a great animal which excited considerable astonishment and alarm among the Western Isles of Scotland. The following extract is taken from a letter of Mr. Maclean, the parish minister of Eigg, dated 1809, to Dr. Neill, the learned and worthy Secretary of the Wernerian Society:—"I saw the animal of which you inquire, in June, 1808, on the coast of Coll. Rowing along that coast, I observed, at about the distance of half a mile, an object to windward, which gradually excited astonishment. At first view it appeared like a small rock; but, knowing that there was no rock in that situation, I fixed my eyes closely upon it. Then I saw it elevated considerably above the level of the

sea, and, after a slow movement, distinctly perceived one of its eyes. Alarmed at the unusual appearance and magnitude of the animal, I steered so as to be at no great distance from the shore. When nearly in a line between it and the shore, the monster, directing its head, which still continued above water, toward us, plunged violently under water. Certain that he was in chase of us, we plied hard to get ashore. Just as we leaped out on a rock, and had taken a station as high as we conveniently could, we saw it coming rapidly under water towards the stern of our boat. When within a few yards of it, finding the water shallow, it raised its monstrous head above water, and, by a winding course, got, with apparent difficulty, clear of the creek where our boat lay, and where the monster seemed in danger of being embayed. It continued to move off with its head above water, and with the wind for about half a mile, before we lost sight of it. Its head was somewhat broad, and of form somewhat oval; its neck somewhat smaller; its shoulders, if I can so term them, considerably broader, and thence it tapered towards the tail, which last it kept pretty low in the water, so that a view of it could not be taken so distinctly as I wished. It had no fins that I could perceive, and seemed to me to move progressively by undulation up and down. Its length I believed to be between seventy and eighty feet. When nearest to me it did not raise its head wholly above water, so that the neck being under water, I could perceive no shining filaments thereon, if it had any. Its progress motion under water I took to be very rapid. About the time I saw it, it was seen near the Isle of Canna. The crews of thirteen fishing boats, I am told, were so much terrified at its appearance, that they, in a body, fled from it to the nearest creek for safety. On the passage from Rum to Canna, the crew of one boat saw it coming towards them, with the wind, and its head high above water. One of the crew pronounced the head as large as

a little boat, and its eye as large as a plate. The men were much terrified, but the monster offered them no molestation." Dr. Hibbert mentions that the Great Sea-Serpent has occasionally been recognised in the Shetland Seas; and specifies one which was seen off the Isle Stonness, Vaeley Island, and Dunvossness.

We now turn to several instances of the appearance of the Sea-Serpent which have been witnessed off the coast of America; and we do so by referring first to the Report published by a Committee appointed by the Linnæan Society of New-England, to collect all the evidence they could obtain on the subject. In the month of August, 1817, it was generally reported that a very singular animal, of prodigious size, had been frequently seen in the Harbor of Gloucester, Cape Ann, about thirty miles from Boston. In general appearance, it resembled a Serpent, and was said to move with astonishing rapidity. It was visible only in calm and bright weather, and floated on the surface of the water, like a number of buoys following each other in a line.

In the report to which we have referred, the affidavits of a great many individuals of unblemished character are collected, which leaves no room to apprehend any thing like deceit. They do not agree in every minute particular, but in regard to its great length and Snake-like form, they are harmonious. The first person who makes deposition saw it for nearly half an hour, at the distance of two hundred and fifty yards. At that distance he could not take in the two extremities with his glass. The second witness depones, that he observed a strange marine animal, which he believed to be a Serpent: it continued in sight for an hour and a half, and moved through the water with great rapidity, at the rate of a mile in two, or, at most, three minutes. On another occasion he saw it lying perfectly still, extended on the water, and displaying about fifty feet of its body. The third witness judged it

to be between eighty and ninety feet in length, with the head formed somewhat like the Rattle-Snake, but nearly as large as that of the horse. At one time it showed about fifty distinct portions of its body. The fourth witness saw it open its mouth, which appeared like that of a Serpent. Another shot his gun loaded with ball at it, at the distance of thirty feet; when he found the monster immediately turned round, as if intending to approach him, and passed very near the boat. The tenth deposition we shall give somewhat more fully. "On the 20th of June, 1815, my boy informed me of an unusual appearance on the surface of the sea in the Cove. When I viewed it through the glass, I was in a moment satisfied that it was some aquatic animal, with the form, motions, and appearance of which I was not previously acquainted. It was about a quarter of a mile from the shore, and was moving with great rapidity to the southward; it appeared almost thirty feet in length. Presently it turned about, and then displayed a greater length, I suppose at least one hundred feet. It then came towards me very rapidly, and lay entirely still on the surface of the water. His appearance then was like a string of buoys. I saw thirty or forty of these protuberances, or hunches, which were about the size of a barrel. The head appeared six or eight feet long, and tapered off to the size of a horse's head. He then appeared about a hundred and twenty feet long; the body appeared of a uniform size; the color deep brown. I could not discover any eye, mane, gills, or breathing holes; I did not see any fins or lips." We add, that there are many other depositions equally pointed as to the occurrence of this extraordinary creature, and several letters respecting it; one from the Honorable Lonson Nash, one of the committee of the Linnæan Society, and himself an eye-witness, and another addressed by a clergyman to Judge Davis, the President of the Society. General Humphreys, by whom the affidavits were taken, transmitted a copy of them, and a detail

of the whole circumstances, to the late Sir Joseph Banks, in whose library the documents are still preserved.

An animal of similar appearance was again seen in August, 1819, off Nahant, Boston, which remained in the neighborhood for some weeks. When first seen, it was stationary for four hours near the shore, and two hundred persons assembled to view it. Thirteen folds were counted, and the head, which was Serpent-shaped, was elevated two feet above the surface. Its eye was remarkably brilliant and glistening. The water was smooth, and the weather calm and serene. When it disappeared, its motion was undulatory, making curves perpendicular to the surface of the water, and giving the appearance of a long moving string of corks. The last notice we have seen of this American animal, bears date July, 1833. The Boston and New York papers of that date state, that the Sea-Serpent had again appeared off Nahant. "It was first seen on Saturday afternoon, passing between Egg Rock and the Promontory, winding his way into Lynn Harbor, and again on Sunday morning, heading for South Shores. He was seen by forty or fifty ladies and gentlemen, who insist that they could not have been deceived."

In connection with the animal thus seen in America, we must not omit the authentic account of a previously undescribed species of Serpent, which has a striking resemblance in some of its features to the apocryphal animal on which we are now dwelling. The Boston Society of Natural History has the merit of having first brought this Serpent under the notice of Zoologists, and the committee who described it unhesitatingly regarded it as a specimen of one of the young of the Great Sea-Serpent. It was seen and killed in September, 1817, near Sandy Bay, between a salt lake and the sea, at no great distance from the shore, and was speedily brought to Boston for the examination of the Society. It was a yard long all but half an inch. The contour of the back exhibited its most

singular feature, for here was found a waving line, produced by a series of permanent risings, which commenced near the head, and extended, almost without interruption, to the tail, their total number being forty. The body could be bent with the greatest facility in the vertical direction, especially at the undulations, but not without great difficulty latterly. The Society applied to this animal the name of *Scoliophis Atlanticus*. M. de Blainville, in analyzing the various documents which have been published concerning this Serpent, remarks—"That a new species of Serpent has been discovered in America, which is really very singular, especially as it regards its vertebral column, ribs, and mode of progression, appears certain; but that this small Serpent is precisely of the same species as the great marine animal which has appeared off the coast, and whose existence we can scarcely deny, is very doubtful."

But long before the Great Sea-Serpent was ever suspected of being a visitor of the British Isles, or of the New World, it was regarded as a well known member of the Fauna of Scandinavia. In this connection, we will not omit the unquestionably exaggerated statements of the honest missionary, Hans Egede, concerning what he tells us he himself witnessed off the coast of Greenland, in the year 1734. After speaking of the Mermaid, &c., he adds, "None of these sea-monsters have been seen by us, nor by any of our time that I could hear, save that most dreadful monster which showed itself on the surface of the water off our colony, in 64° north latitude. This monster was of so huge a size, that, coming out of the water, its head reached as high as the main mast; its body was as bulky as the ship, and three or four times as long. It had a long pointed snout, and spouted like a whale fish; it had great broad paws; the body seemed covered with shell-work, and the skin was very rugged and uneven. The under part of its body was shaped like an enormous huge

Serpent; and when it dived again under water, it plunged backwards into the sea, and so raised its tail aloft, which seemed a whole ship's length distant from the bulkiest part of its body."

Finally, we subjoin the accounts, older and more recent, given of this animal in what may be called its native retreats. We shall begin with a short abridgment of the information supplied in Pontoppidon's Natural History of Norway:—"Our coast," says the learned bishop, "is the only place in Europe visited by this terrible creature. This makes many persons who are enemies to credulity entertain doubts about it. I have questioned its existence myself, till that suspicion was removed by full and sufficient evidence from creditable and experienced fishermen and sailors, of which there are hundreds who can testify they have annually seen them. All these persons agree very well in the general description. In all my inquiries, I have scarcely spoken to any intelligent person who was not able to give strong assurances of the existence of this fish; and some of our traders think it a very strange question, when they are seriously asked whether there be such a creature; they think it as ridiculous, as if the question were put to them whether there be such fish as Cod or Eel." After this, a long letter is supplied from Captain L. de Ferry, who was in his boat, with a crew of eight men, when they saw a Sea-Serpent, which he fired at and wounded. His description very much agrees with that already given, and every particular is authenticated by the affidavits of two of his crew. We are also informed that Governor Berestrap states, that he saw a similar animal a few years before, and drew a sketch of it. Mr. Hans Strom, a clergyman, also caused a sketch to be made of one which came under his inspection, and other eye-witnesses are named. The bishop concludes, "I might mention, to the same purpose, many more persons of equal credit and reputation." But we must bring these state-

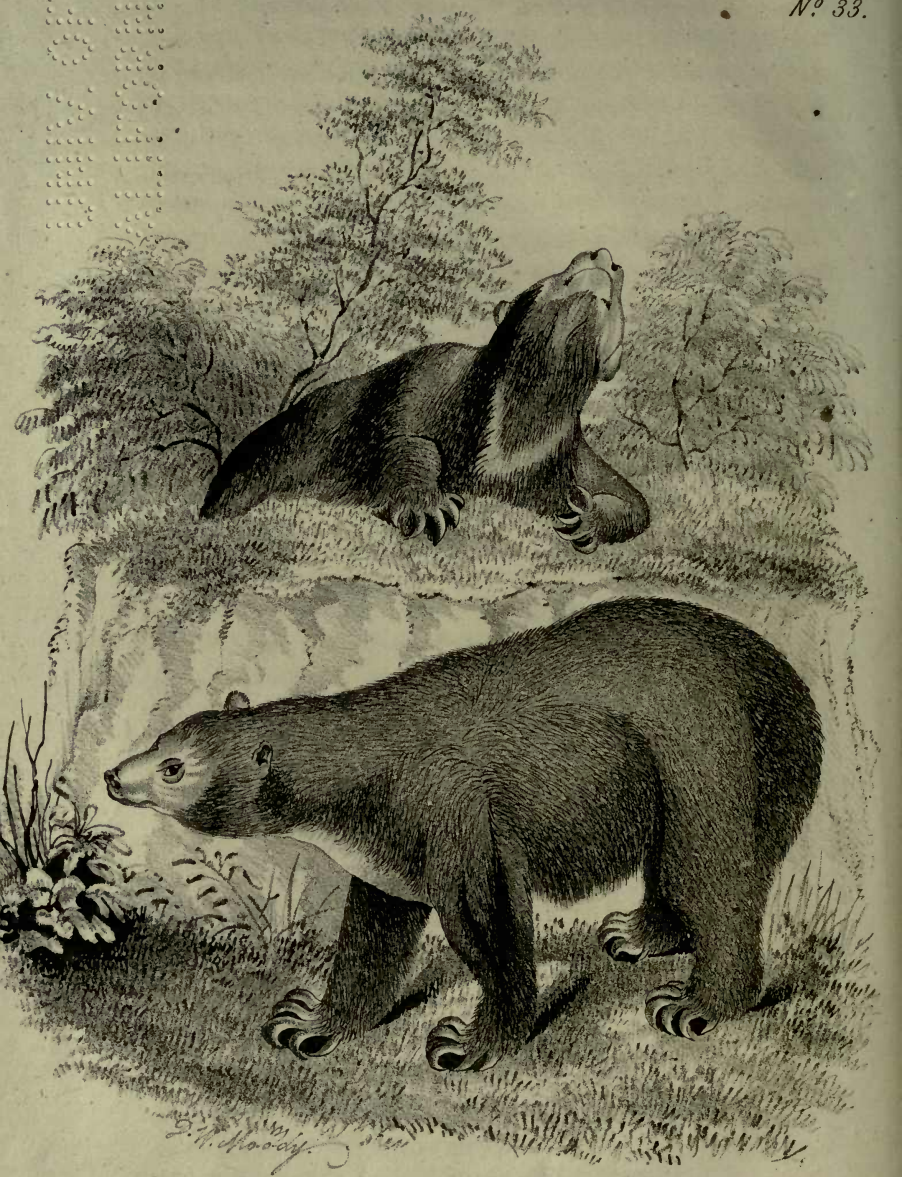
ments of Pontopidon to a close with one other short quotation. "Though it is difficult to ascertain its exact dimensions, yet all who have seen it are unanimous in affirming that it appears to be about 600 feet long; that it lies in the water in many folds, and there appears like so many hogsheads floating in a line, at a considerable distance from each other."

Again, Sir A. de Capell Brooke makes allusion to this animal in his "Travels in Norway." He states that he did not witness it himself, but that the fishermen of Sejerstad stated that it was seen in 1818 in the Folden *fiord*. In July, 1819, it made its appearance off Otersun in Norway, and Captain Schilderup stated to Sir Arthur that it was seen daily during the whole month, and continued while the warm weather lasted, as if dozing in the sun-beams. When Captain S. first saw it, he was in a boat at the distance of about 200 yards, and supposes its length to have been about 600 feet. The Bishop of Nordland had seen two of them about eight miles from Drontheim; he was not far from them, and considered the largest to be about 100 feet. Again, in 1822, one of these creatures, reported to be as bulky as a large ox, and about a fourth of an English mile in length, made its appearance off the island of Soröe, near Tinmask, and was seen by many of the islanders.

The most recent account of this monster we have noticed, appeared in the public newspapers of Drontheim, in the autumn of 1837, and we confess we cannot regard it as a sheer fabrication:—"The Adiz of this city contains an account from Tozen of the end of August, which it says was communicated to the editor by a very enlightened and principled man, so that it merits attention, as tending to remove the doubt respecting the existence of the Sea-Serpent. The account says, that since the beginning of the dog-days, the Serpent has been seen at various parts of the coast of that district. One of them seems to have

remained constantly during this summer near Storfosen, at the Kergvang Islands. Several fishermen have been so dreadfully alarmed at the sudden appearance of the Serpent so near their boats, that they did not know in what direction to escape. The Serpent did not attack, but followed the boat for some distance, and the men in their haste so over exerted themselves, that two were confined to their beds. Very credible persons affirm that the length of the Sea-Serpent may be taken at 600 or 800 ells, or perhaps more, for when these people were near its head, they could not discern its tail. Its greatest thickness is close to the head. These observations were made very clearly within these few days, amongst others, by a credible, sensible man, who, with his two sons, was on our island where they landed, and where the Serpent, after following their boat, swam slowly by."

With these extracts, and without farther comment, we close our account of the Great Sea-Serpent, only remarking, that till favoring circumstances bring the animal under the examination of naturalists, the satisfaction, which is desiderated respecting it, is scarcely to be expected



The Black Bear.

THE BEAR.

PLATE XXXIII.—THE BEAR.

Of the Bear there are three different kinds, the Brown Bear of the Alps, the Black Bear of North America, which is smaller, and the great Greenland or White Bear. These, though different in their forms, are no doubt of the same original, and owe their chief variations to food and climate. They have all the same habitudes, being equally carnivorous, treacherous and cruel.

The Brown Bear is properly an inhabitant of the temperate climates; the black finds subsistence in the northern regions of Europe and America; while the great white bear takes refuge in the most icy climates, and lives where scarcely any other animal can find subsistence.

The brown bear is not only savage, but solitary; he takes refuge in the most unfrequented parts, and the most dangerous precipices of uninhabited mountains. It chooses its den in the most gloomy parts of the forest, in some cavern that has been hollowed by time, or in the hollow of some old enormous tree. There it retires alone, and passes some months of the winter without provisions, or without ever stirring abroad. However, this animal is not entirely deprived of sensation, like the bat or the dormouse, but seems rather to subsist upon the exuberance of its former flesh, and only feels the calls of appetite, when the fat it had acquired in summer begins to be entirely wasted away. In this manner, when the bear retires to its den, to hide for the winter, it is extremely fat; but at the end of forty or fifty days, when it comes forth to seek for fresh nourishment, it seems to have slept all its flesh away. It is a common report, that during this time they

live by sucking their paws, which is a vulgar error that scarcely requires confutation.

The voice of the bear is a kind of growl, interrupted with rage, which is often capriciously exerted; and though this animal seems gentle and placid to its master, when tamed, yet it is still to be distrusted and managed with caution, as it is often treacherous and resentful without a cause.

This animal is capable of some degree of instruction. There are few but have seen it dance in awkward measures upon its hind feet, to the voice or the instrument of its leader; and it must be confessed that the dancer is often found to be the best performer of the two. I am told, that it is first taught to perform in this manner, by setting it upon hot plates of iron, and then playing to it, while in this uneasy situation.

The bear, when come to maturity, can never be tamed, it then continues in its native fierceness, and, though caged, still formidably impotent, at the approach of its keeper flies to meet him. But notwithstanding the fierceness of this animal, the natives of those countries where it is found hunt it with great perseverance and alacrity. The least dangerous method of taking it is by intoxicating it, by throwing brandy upon honey, which it seems to be chiefly fond of, and seeks for in the hollow of trees.

The White Greenland Bear differs greatly, both in figure and dimensions, from those already described; and though it preserves in general the external form of its more southern kindred, yet it grows to above three times the size. The brown bear is seldom above six feet long; the white bear is often known from twelve to thirteen. The brown bear is made rather strong and sturdy, like the mastiff; the Greenland bear, though covered with very long hair, and apparently bulky, is nevertheless more slender, both as to the head, neck, and body, and more inclining to the shape of the grayhound. In short, all the variations of its

figure and its color, seem to proceed from the coldness of the climate where it resides, and the nature of the food it is supplied with.

The number of these animals that are found about the north pole, if we consider the scarcity there of all other terrestrial creatures, is very amazing. They are not only seen on land, but often on ice-floats, several leagues at sea. They are often transported in this manner to the very shores of Iceland, where they no sooner land, but all the natives are in arms to receive them. It often happens, that when a Greenlander and his wife are paddling out at sea, by coming too near an ice-float, a white bear unexpectedly jumps into their boat, and if he does not overset it, sits camly where he first came down, and, like a passenger, suffers himself to be rowed along. It is probable the poor little Greenlander is not very fond of his new guest; however, he makes a virtue of necessity, and hospitably rows him to shore.

The Black Bear. (*Ursus Americanus*, Desm.) This animal is found in considerable numbers, in the northern districts of America. In size and form he approaches nearest to the brown bear; but his color is a uniform shining jet black, except on the muzzle, where it is fawn colored; on the lips and sides of the mouth it is almost gray. The hair, except on the muzzle, is long and straight, and is less shaggy than in most other species. The forehead has a slight elevation, and the muzzle is elongated, and somewhat flattened above. The young ones, however, are first of a bright ash color, which gradually changes into a deep brown, and ends by becoming a deep black.

The American black bear lives a solitary life in forests and uncultivated deserts, and subsists on fruits, and on the young shoots and roots of vegetables. Of honey he is exceedingly fond, and, as he is a most expert climber, he scales the loftiest trees in search of it. Fish, too, he de

lights in, and is often found in quest of them on the borders of lakes and on the sea-shore. When these resources fail, he will attack small quadrupeds, and even animals of some magnitude. As, indeed, is usual in such cases, the love of flesh in him grows with the use of it.

As the fur is of some value, the Indians are assiduous in the chase of the creature which produces it. "About the end of December, from the abundance of fruits they find in Louisiana and the neighboring countries, the bears become so fat and lazy that they can scarcely run. At this time they are hunted by the American Indians. The nature of the chase is generally this: the bear chiefly adopts for his retreat the hollow trunk of an old cypress tree, which he climbs, and then descends into the cavity from above. The hunter, whose business it is to watch him into his retreat, climbs a neighboring tree, and seats himself opposite to the hole. In one hand he holds his gun, and in the other a torch, which he darts into the cavity. Frantic with rage and terror, the bear makes a spring from his station; but the hunter seizes the instant of his appearance, and shoots him.

"The pursuit of these animals is a matter of the first importance to some of the Indian tribes, and is never undertaken without much ceremony. A principal warrior gives a general invitation to all the hunters. This is followed by a strict fast of eight days, in which they totally abstain from food; but during which the day is passed in continual song. This is done to invoke the spirits of the woods to direct the hunters to the places where there are abundance of bears. They even cut the flesh in divers parts of their bodies, to render the spirits more propitious. They also address themselves to the spirits of the beasts slain in preceding chases, and implore these to direct them in their dreams to an abundance of game. The chief of the hunt now gives a great feast, at which no one dares to appear without first bathing. At this entertainment, con-

trary to their usual custom, they eat with great moderation. The master of the feast touches nothing; but is employed in relating to the guests ancient tales of feats in former chases; and fresh invocations to the spirits of the deceased bears conclude the whole.

"They then sally forth, equipped as if for war, and painted black; and they proceed on their way in a direct line, not allowing rivers, marshes, or any other impediment, to stop their course, and driving before them all the beasts they find. When they arrive at the hunting ground, they surround as large a space as they can; and then contract their circle, searching at the same time every hollow tree, and every place capable of being the retreat of a bear; and they continue the same practice till the chase is finished.

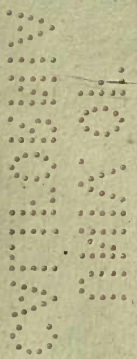
"As soon as the bear is killed, a hunter puts into his mouth a lighted pipe of tobacco, and blowing into it, fills the throat with the smoke, conjuring the spirit of the animal not to resent what they are about to do to its body, or to render their future chases unsuccessful. As the beast makes no reply, they cut out the string of the tongue, and throw it into the fire. If it crackle and shrivel up (which it is almost sure to do,) they accept this as a good omen; if not, they consider that the spirit of the beast is not appeased, and that the chase of the next year will be unfortunate."

In the Tower Menagerie of London, there is a very tame and playful American bear, which was presented to it in 1824. He was originally in the same den with the hyena, and, except at feeding times, was on good terms with his companion. A piece of meat, however, would occasionally produce a temporary dissension between them; in which the hyæna, though the smallest of the two, had usually the upper hand. On such occasions, the defeated bear would moan most piteously, in a tone somewhat like

a sheep bleating, while the hyæna devoured the remainder of his dinner.

When our forefathers first settled in America, bears were common in all parts of the country along the Atlantic. Many adventures with them took place, some of which are recorded in the histories of the times. The following is said to have occurred at a later period:

Some years since, when the western part of New-York was in a state of nature, and wolves and bears were not afraid of being seen, some enterprising pilgrim had erected and put in operation a saw-mill, on the banks of the Genesee. One day as he was sitting on the log, eating his bread and cheese, a large black bear came from the woods towards the mill. The man, leaving his luncheon on the log, made a spring, and seated himself on a beam above; when the bear, mounting the log, sat down with his rump towards the saw, which was in operation, and satisfied his appetite on the man's dinner. After a little while, the saw approached near enough to interfere with the feathers on Bruin's back, and he hitched along a little and kept on eating. Again the saw came up, and scratched a little flesh. The bear then whirled about, and throwing his paws around the saw, held on till he was mangled through and through, when he rolled off, fell through into the flood, and bled to death.



Hunting the Otter.

THE OTTER.

PLATE XXXIV.—THE OTTER.

The gradations of nature from one class of beings to another are made by imperceptible deviations. As in opposite armies the two bodies are distinct and separated from each other, while yet between them are various troops that plunder on both sides and are friends to neither; so between terrestrial and aquatic animals there are tribes that can scarce be referred to any rank, but lead an amphibious life between them. Sometimes in water, sometimes on land, they seem fitted for each element, and yet completely adapted to neither. Wanting the agility of quadrupeds upon land, and the perseverance of fishes in the deep, the variety of their powers only seems to diminish their force; and though possessed of two different methods of living, they are more inconveniently provided than such as have but one.

All quadrupeds of this kind, though covered with hair in the usual manner, are furnished with membranes between the toes, which assist their motion in the water. Their paws are broad and their legs short, by which they are more completely fitted for swimming; for, taking short strokes at a time, they make them oftener and with greater rapidity. Some, however, of these animals are more adapted to live in the water than others; but, as their power increases to live in the deep, their unfitness for living upon land increases in the same proportion. Some, like the otter, resemble quadrupeds in every thing except in being in some measure web-footed; others depart still farther, in being, like the beaver, not only web-footed, but having the tail covered with scales, like those of a fish.

Others depart yet farther, as the seal and the morse, by having the hind feet stuck to the body like fins; and others, as the lamentin, almost entirely resemble fishes, by having no hind feet whatsoever. Such are the gradations of the amphibious tribe. They all, however, get their living in the water, either by habit or conformation; they all continue a long time under water; they all consider that element as their proper abode; whenever pressed by danger they fly to the water for security; and, when upon land, appear watchful, timorous, and unwieldy.

In the first step of the progression from land to amphibious animals, we find the Otter, resembling those of the terrestrial kind in shape, hair, and internal conformation; resembling the aquatic tribes in its manner of living, and in having membranes between the toes to assist it in swimming. From this peculiar make of its feet, which are very short, it swims even faster than it runs, and can overtake fishes in their own element. The color of this animal is brown; and it is somewhat of the shape of an overgrown weasel, being long, slender, and soft-skinned. However, if we examine its figure in detail, we shall find it unlike any other animal hitherto described, and of such a shape as words can but weakly convey. Its usual length is about two feet long, from the tip of the nose to the insertion of the tail; the head and nose are broad and flat; the mouth bears some similitude to that of a fish; the neck is short, and equal in thickness to the head; the body long; the tail broad at the insertion, but tapering off to a point at the end; the eyes are very small, and placed nearer the nose than usual in quadrupeds. The legs are very short, but remarkably strong, broad, and muscular. The joints are articulated so loosely, that the animal is capable of turning them quite back, and bringing them on line with the body, so as to perform the office of fins. Each foot is furnished with five toes, connected by strong, broad webs, like those of water-fowl. Thus nature, in

every part, has had attention to the life of an animal whose food is fish, and whose haunts must necessarily be about water.

This voracious animal is never found but at the sides of lakes and rivers, but particularly the former, for it is seldom fond of fishing in a running stream, for the current of the water having more power upon it than the fishes it pursues, if it hunts against the stream, it swims too slow; and if with the stream, it overshoots its prey. However, when in rivers, it is always observed to swim against the stream, and to meet the fishes it preys upon rather than to pursue them. In lakes it destroys much more than it devours, and is often seen to spoil a pond in the space of a few nights. But the damage they do by destroying fish is not so great as their tearing in pieces the nets of the fishers, which they infallibly do whenever they happen to be entangled. The instant they find themselves caught, they go to work with their teeth, and in a few minutes destroy nets of a very considerable value.

The otter has two different methods of fishing; the one, by catching its prey from the bottom upward; the other, by pursuing it into some little creek, and seizing it there. In the former case, as this animal has longer lungs than most other quadrupeds, upon taking in a quantity of air, it can remain for some minutes at the bottom; and whatever fish passes over at that time is certainly taken; for as the eyes of fish are placed so as not to see under them, the otter attacks them off their guard from below; and, seizing them at once by the belly, drags them on shore, where it often leaves them untouched, to continue the pursuit for hours together. The other method is chiefly practised in lakes and ponds, where there is no current; the fish thus taken are rather of the smaller kind, for the great ones will never be driven out of deep water.

In this manner, the otter usually lives during the summer, being furnished with a supply much greater than its

consumption; killing for its amusement, and infecting the edges of the lake with quantities of dead fish, which it leaves there as trophies rather of its victories than its necessities. But in winter, when the lakes are frozen over, and the rivers pour with a rapid torrent, the otter is often greatly distressed for provisions; and is then obliged to live upon grass, weeds, and even the bark of trees. It then comes upon land, and, grown courageous from necessity, feeds upon terrestrial animals, rats, insects, and even sheep themselves. Nature, however, has given it the power of continuing a long time without food; and although, during that season, it is not rendered quite torpid, like the marmout or the dormouse, yet it keeps much more within its retreat, which is usually the hollow of a bank, worn under by the water. There it often forms a kind of gallery, running for several yards along the edge of the water; so that when attacked at one end, it flies to the other, and often evades the fowler by plunging into the water at forty or fifty paces distant, while he expects to find it just before him.

In the rivers and the lakes frequented by the otter, the bottom is generally stony and uneven, with many trunks of trees, and long roots stretching under the water. The shore also is hollow and scooped inward by the waves. These are the places the otter chiefly chooses for its retreat; and there is scarce a stone which does not bear the mark of its residence, as upon them its excrements are always made. It is chiefly by this mark that its lurking places are known, as well as by the quantity of dead fish that are found lying here and there upon the banks of the water. To take the old ones alive is no easy task, as they are extremely strong, and there are few dogs that will dare to encounter them. They bite with great fierceness, and never let go their hold when they have once fastened. The best way, therefore, is to shoot them at once, as they never will be thoroughly tamed; and, if kept for the pur-

poses of fishing, are always apt to take the first opportunity of escaping. But the young ones may be more easily taken, and converted to very useful purposes. The otter brings forth its young generally under the hollow banks, upon a bed of rushes, flags, or such weeds as the place affords it in the greatest quantities. I see in the British Zoolgoy a description of its habitation, where that naturalist observes, "that it burrows under ground, on the banks of some river or lake, and always makes the entrance of its hole under water, then works up the surface of the earth, and there makes a minute orifice for the admission of air, and this little air-hole is often found in the middle of some thicket." In some places this may be true, but I have never observed any such contrivance; the retreat, indeed, was always at the edge of the water, but it was only sheltered by the impending bank; and the otter itself seemed to have but a small share in its formation. But be this as it may, the young ones are always found at the edge of the water; and, if under the protection of their dam, she teaches them instantly to plunge, like herself, into the deep, and escape among the rushes or weeds that fringe the stream. At such times, therefore, it is very difficult to take them; for, though never so young, they swim with great rapidity, and in such a manner that no part of them is seen above water, except the tip of the nose. It is only when the dam is absent that they can be taken; and, in some places, there are dogs purposely trained for discovering their retreats. Whenever the dog comes to the place, he soon, by his barking, shows that the otter is there; which, if there be an old one, instantly plunges into the water, and the young all follow. But, if the old one be absent, they continue terrified, and will not venture forth but under her guidance and protection. In this manner they are secured, and taken home alive, where they are carefully fed with small fish and water. In proportion, however, as they gather strength, they have milk

mixed among their food, the quantity of their fish provision is retrenched, and that of vegetables is increased, until, at length, they are fed wholly upon bread, which perfectly agrees with their constitution. The manner of training them up to hunt for fish, requires not only assiduity, but patience; however, their activity and use, when taught, greatly repays the trouble of teaching; and, perhaps, no other animal is more beneficial to his master. The usual way is, first to learn them to fetch, as dogs are instructed; but, as they have not the same docility, so it requires more art and experience to teach them. It is usually performed by accustoming them to take a truss stuffed with wool, of the shape of a fish, and made of leather, in their mouths, and to drop it at the word of command; to run after it when thrown forward, and to bring it to their master. From this they proceed to real fish, which are thrown dead into the water, and which they are taught to fetch from thence. From the dead they proceed to the live, until at last the animal is perfectly instructed in the whole art of fishing. An otter thus taught is a very valuable animal, and will catch fish enough to sustain not only itself, but a whole family. I have seen one of these go to a gentleman's pond at the word of command, drive up the fish into a corner, and seizing upon the largest of the whole, bring it off, in its mouth, to its master.

For the destruction which he makes among the finny tribe, and also the disturbance which he gives them in their haunts, the otter is an object of abhorrence to the angler. Old Izaak Walton calls them "villainous vermin," and many other hard names, and declares that, in his judgment, "all men that keep otter-dogs ought to have pensions from the king, to encourage them to destroy the breed of these base otters."

The sport of otter hunting in South America is thus described by a recent traveller:—In the month of May, the parties assemble by previous arrangement, composed prin-

cipally of the chief inhabitants and their relatives or clans, and visiters, male slaves, muleteers, &c. Having ascended the waterfalls, they encamp near those clear and transparent rivers in which otters abound. After the business of physicking the bloodhounds and a species of bluish cur without any hair, they make their hunting dispositions, and appoint their land and water captains to head each party; the duty of the latter is to stand in the prow of the canoe, and cheer the dogs to the prey. The huntsman, in fact, is mostly an Indian, as those dogs will not hunt to any other tongue; what this is owing to, whether custom or sagacity, I know not, but it is certainly the case; however, the young Spaniards and Creoles have latterly remedied this defect, and are now as well qualified to hunt a bloodhound in the Indian tongue as an Indian himself. Both parties having armed themselves with otter spears, barbed like harpoons, and with handles made of rough, light wood, about ten feet in length, they cheer on the bloodhounds, who no sooner wind the prey than they join chorus with their huntsman, until they arrive near the Calle Pero, or otter city, when the land party divides into three; one watches; another ascends the ford; while the other pokes the banks, in order to eject the creature. As soon as he is started, the hounds are again in full cry, and the curs are loosed to dive after him, and will relieve each other in this task; as soon as one is up, down goes the other, while the hounds keep up the cry in the water at a slow pace, until they eventually force the creature to the head of the stream into shallow water, where these curs either snap him up, or he is speared by the hunters; after this the hounds are allowed the gratification of mouthing him until satisfied, when they again return to depopulate this little commonwealth of otters.

The otter is a very destructive and ferocious water animal, and will destroy its prey by biting off the head, and

leaving the remainder; thus killing many more than are necessary for its sustenance.

> . . . . . Rapine and spoil
> Haunt e'en the lowest deeps: seas have their sharks;
> Rivers and ponds inclose the rav'nous pike;
> He, in his turn, becomes a prey—on him
> Th' amphibious otter feasts . . . .
> . . . . . nor spears
> That bristle on his back, defend the perch
> From his wide greedy jaws; nor burnish'd mail
> The yellow carp; nor all his arts can save
> Th' insinuating eel, that hides his head
> Beneath the slimy mud; nor yet escapes
> The crimson-spotted trout, the river's pride,
> And beauty of the stream.

It is found in all parts of Europe, and in the north of Asia, and in North America. It averages about two feet in the length of its body, and the tail is about sixteen inches. It is said that, when the waters are frozen, it attacks and devours smaller quadrupeds. It is very fierce, and, when hunted, will often turn on the dogs, and bite them severely. Notwithstanding the natural ferocity of its character, which, however, is principally directed against fish, there are many instances of its having been tamed, and rendered of considerable service in fishing. Buffon, in his original edition, expressed his doubts of this, though, in the supplement, he retracted them.

It is not properly amphibious, or capable of living either on land or in the water. It is true that it is an excellent diver, and can remain a considerable time under water; but it has been known to have been drowned when entangled among weeds in the pursuit of fish.

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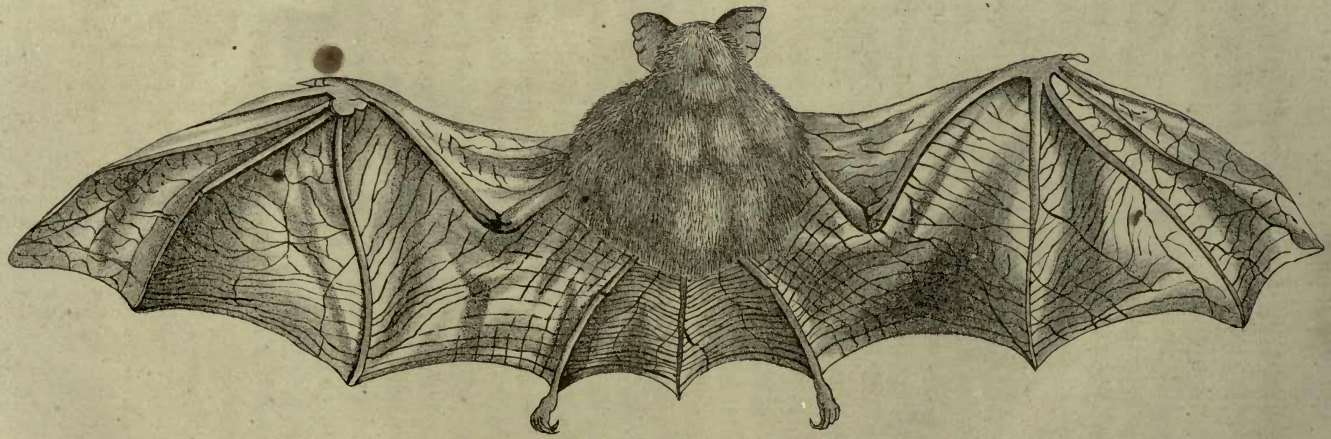


The Bat.

THE BAT.

PLATE XXXV.—THE BAT.

The Bat in scarce any particular resembles the bird, except in its power of sustaining itself in the air. It brings forth its young alive; it suckles them; its mouth is furnished with teeth; its lungs are formed like those of quadrupeds; its intestines, and its skeleton, have a complete resemblance, and even are, in some measure, seen to resemble those of mankind.

The bat most common in England, is about the size of a mouse; or nearly two inches and a half long. The membranes that are usually called wings, are, properly speaking, an extension of the skin all round the body, except the head, which, when the animal flies, is kept stretched on every side, by the four interior toes of the fore feet, which are enormously long, and serve like masts that keep the canvass of a sail spread, and regulate its motions. The first toe is quite loose, and serves as a heel when the bat walks, or as a hook, when it would adhere to any thing. The hind feet are disengaged from the surrounding skin, and divided into five toes, somewhat resembling those of a mouse. The skin by which it flies is of a dusky color. The body is covered with a short fur, of a mouse color, tinged with red. The eyes are very small; the ears like those of a mouse.

This species of the bat is very common in England. It makes its first appearance early in summer, and begins its flight in the dusk of the evening. It principally frequents the sides of woods, glades, and shady walks; and is frequently observed to skim along the surface of pieces of water. It pursues gnats, moths, and nocturnal insects of

every kind. It feeds upon these; but will not refuse meat, whenever it can find it. Its flight is a laborious, irregular movement; and if it happens to be interrupted in its course, it cannot readily prepare for a second elevation; so that if it strikes against any object, and falls to the ground, it is usually taken. It appears only in the most pleasant evenings, when its prey is generally abroad, and flies in pursuit with its mouth open. At other times it continues in its retreat; the chink of a ruined building, or the hollow of a tree. Thus this little animal, even in summer, sleeps the greatest part of its time, never venturing out by daylight, nor in rainy weather; never hunting in quest of prey, but for a small part of the night, and then returning to its hole. But its short life is still more abridged by continuing in a torpid state during the winter. At the approach of the cold season, the bat prepares for its state of lifeless inactivity, and seems rather to choose a place where it may continue safe from interruption, than where it may be warmly or conveniently lodged. For this reason it is usually seen hanging by its hooked claws to the roofs of caves, regardless of the eternal damps that surround it. The bat seems the only animal that will venture to remain in these frightful subterranean abodes, where it continues in a torpid state, unaffected by every change of the weather. Such of this kind as are not provident enough to procure themselves a deep retreat, where the cold and heat seldom vary, are sometimes exposed to great inconveniences, for the weather often becomes so mild in the midst of winter as to warm them prematurely into life, and to allure them from their holes in quest of food, when nature has not provided a supply. These, therefore, have seldom strength to return; but, having exhausted themselves in a vain pursuit after insects which are not to be found, are destroyed by the owl, or any other animal that follows such petty prey.

From Linnæus we learn, that the female makes no nest

for her young, as most birds and quadrupeds are known to do. She is barely content with the first hole she meets, where sticking herself by her hooks against the sides of her apartments, she permits her young to hang at the nipple, and in this manner to continue for the first or second day. When, after some time, the dam begins to grow hungry, and finding a necessity for stirring abroad, she takes her little ones and sticks them to the wall, in the manner she before hung herself; there they immovably cling, and patiently wait till her return.

Thus far this animal seems closely allied to the quadruped race. Its similitude to that of birds is less striking. As nature has furnished birds with extremely strong pectoral muscles, to move the wings, and direct their flight, so has it also furnished this animal. As birds also have their legs weak, and unfit for the purposes of motion, the bat has its legs fashioned in the same manner, and is never seen to walk, or, more properly speaking, to push itself forward with its hind legs, but in cases of extreme necessity. The toes of the fore legs, or, if we may use the expression, its extremely long fingers, extend the web like a membrane that lies between them; and this, which is extremely thin, serves to lift the little body into the air: in this manner, by an unceasing percussion, much swifter than that of birds, the animal continues, and directs its flight; however, the great labor required in flying, soon fatigues it; for, unlike birds, which continue for days together upon the wing, the bat is tired in less than an hour, and then returns to its hole, satisfied with its supply, to enjoy the darkness of its retreat.

If we consider the bat as seen in our own country, we shall find it a harmless, inoffensive creature. It is true that it now and then steals into a larder, and, like a mouse, commits its petty thefts upon the fattest parts of the bacon. But this happens seldom; the general tenor of its industry is employed in pursuing insects that are much more noxious

to us than itself can possibly be; while its evening flight, and its unsteady, wabbling motion, amuse the imagination, and add one figure more to the pleasing group of animated nature.

The varieties of this animal, especially in our country, are but few; and the differences scarce worth enumeration. Naturalists mention the Long-eared Bat, much less than that generally seen, and with much longer ears; the Horse-shoe Bat, with an odd protuberance round its upper lip, somewhat in the form of a horse-shoe; the Rhinoceros Bat, with a horn growing from the nose, somewhat similar to that animal from whence it has the name. These, with several others, whose varieties are too numerous, and differences too minute for a detail, are all inoffensive, minute, and contemptible; incapable, from their size, of injuring mankind, and not sufficiently numerous much to incommode him. But there is a larger race of bats, found in the East and West Indies, that are truly formidable; each of these is singly a dangerous enemy, but when they unite in flocks, they then become dreadful. Were the inhabitants of the African coasts, says Des Marchais, to eat animals of the bat kind, as they do in the East Indies, they would never want a supply of provisions. They are there in such numbers, that when they fly, they obscure the setting sun. In the morning, at peep of day, they are seen sticking upon the tops of the trees, and clinging to each other, like bees when they swarm, or like large clusters of cocoa. The Europeans often amuse themselves with shooting among this huge mass of living creatures, and observing their embarrassment when wounded. They sometimes enter the houses, and the negroes are expert at killing them; but although these people seem for ever hungry, yet they regard the bat with horror, and will not eat it, though ready to starve.

Of foreign bats, the largest we have any certain accounts of, is the Rousette, or the great bat of Madagascar. This

formidable creature is near four feet broad, when the wings are extended; and a foot long, from the tip of the nose to the insertion of the tail. It resembles our bat in the form of its wings, in its manner of flying, and in its internal conformation. It differs from it in its enormous size; in its color, which is red, like that of a fox; in its head and nose also, which resemble those of that animal, and which have induced some to call it the flying fox; it differs also in the number of its teeth; and in having a claw on the fore foot, which is wanting in ours. This formidable creature is found only in the ancient continent; particularly in Madagascar, along the coasts of Africa and Malabar, where it is usually seen about the size of a large hen. When they repose, they stick themselves to the tops of the tallest trees, and hang with their heads downward. But when they are in motion, nothing can be more formidable: they are seen in clouds, darkening the air, as well by day as by night, destroying the ripe fruits of the country, and sometimes settling upon animals, and man himself: they devour, indiscriminately, fruits, flesh, and insects, and drink the juice of the palm-tree: they are heard at night in the forests at more than two miles distance, with a horrible din, but at the approach of day, they usually begin to retire; nothing is safe from their depredations; they destroy fowls and domestic animals, unless preserved with the utmost care, and often fasten upon the inhabitants themselves, attack them in the face, and inflict very terrible wounds. In short, as some have already observed, the ancients seem to have taken their ideas of harpies from these fierce and voracious creatures, as they both concur in many parts of the description, being equally deformed, greedy, uncleanly, and cruel.

An animal not so formidable, but still more mischievous than these, is the American Vampyre. This is still less than the former; but more deformed, and still more numerous. It is furnished with a horn like the rhinoceros bat;

and its ears are extremely long. The other kinds generally resort to the forest, and the most deserted places; but these come into towns and cities, and, after sun-set, when they begin to fly, cover the streets like a canopy. They are the common pest both of men and animals; they effectually destroy the one, and often distress the other. "They are," says Ulloa, "the most expert blood-letters in the world. The inhabitants of those warm latitudes being obliged, by the excessive heat, to leave open the doors and windows of the chambers where they sleep, the vampyres enter, and if they find any part of the body exposed, they never fail to fasten upon it. There they continue to suck the blood; and it often happens that the person dies under the operation. They insinuate their tooth into a vein, with all the art of the most experienced surgeon, continuing to exhaust the body until they are satiated. I have been assured," continues he, "by persons of the strictest veracity, that such an accident has happened to them; and that, had they not providentially awaked, their sleep would have been their passage into eternity; having lost so large a quantity of blood as hardly to find strength to bind up the orifice. The reason why the puncture is not felt is, besides the great precaution with which it is made, the gentle refreshing agitation of the bat's wings, which contribute to increase sleep, and soften the pain."

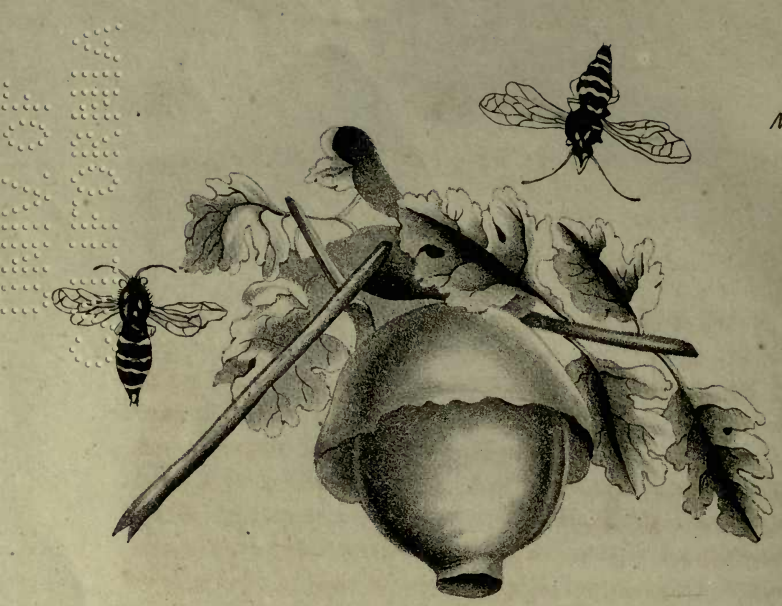
The purport of this account has been confirmed by various other travellers; who all agree that this bat is possessed of a faculty of drawing the blood from persons sleeping; and thus often destroying them before they awake. But still a very strong difficulty remains to be accounted for; the manner in which they inflict the wound. Ulloa, as has been seen, supposes that it is done by a single tooth; but this we know to be impossible, since the animal cannot infix one tooth without all the rest accompanying its motions; the teeth of the bat kind being pretty even, and the mouth but small. Mr. Buffon there-

fore supposes the wound to be inflicted by the tongue; which, however, appears to me too large to inflict an unpainful wound; and even less qualified for that purpose than the teeth. Nor can the tongue, as Mr. Buffon seems to suppose, serve for the purposes of suction, since for this it must be hollow, like a syringe, which it is not found to be. I should therefore suppose, that the animal is endowed with a strong power of suction; and that, without inflicting any wound whatsoever, by continuing to draw, it enlarges the pores of the skin in such a manner that the blood at length passes, and that more freely the longer the operation is continued; so that, at last, when the bat goes off, the blood continues to flow. In confirmation of this opinion, we are told that where beasts have a thick skin, this animal cannot injure them; whereas, in horses, mules, and asses, they are very liable to be thus destroyed. As to the rest, these animals are considered as one of the great pests of South America; and often prevent the peopling of many parts of that continent; having destroyed at Barja, and several other places, such cattle as were brought there by the missionaries, in order to form a settlement.

The smell of these creatures is ranker than that of a fox, yet the Indians consider them as delicious food, and the French who reside in the Isle of Bourbon, even boil them in their soup to give it a relish! The hair of the vampyre bat, interwoven with threads of cyperus squamosus, is used by the natives of New Caledonia for making ropes and the tassels of their clubs.

Captain Stedman, while sleeping in the open air in Surinam, was attacked by one of the spectre bats. On awaking, about four o'clock in the morning, he was extremely alarmed to find himself weltering in congealed blood, and without feeling any pain. Having started up, he ran to the surgeon with a firebrand in his hand, and all over besmeared with gore. The cause of his alarm was, however, soon explained. After he had applied some tobacco

ashes to the wound, and had washed the gore from himself and his hammock, he examined the place where he had lain, and observed several small heaps of congealed blood upon the ground; on examining which, the surgeon judged that he had lost at least twelve or fourteen ounces. Captain Stedman says, that these animals, knowing by instinct that the person they intend to attack is in a sound slumber, they generally alight near the feet; where, while the creature continues fanning with his enormous wings, which keeps the person cool, he bites a piece out of the tip of the great toe, so very small that the head of a pin could scarcely be received into the wound, which is consequently not painful. Yet, through this orifice, he sucks the blood until he is obliged to disgorge. He then begins again, and thus continues sucking and disgorging till he is scarcely able to fly; and the sufferer has often been known to sleep from time into eternity. The spectre bat generally bites in the ear, but always in places where the blood will flow spontaneously.



Hornets & Nest.

Bruin robbing a Bee-hive.

THE HORNET.

PLATE XXXVI.—THE HORNET.

Our readers will observe that on the thirty-sixth plate, there are two engravings. At the top, a hornet's nest. The hornet is one of the largest and most remarkable species of the wasp. It is distinguished by a black breast, and double black spots on the belly; the head is also longer and slenderer, and the eyes somewhat resembling a half moon. It is extremely bold and venomous. It is said by naturalists to have a strong passion for flesh, and, when hungry, that two or three of them will seize upon a small bird, kill it, and devour its flesh; more than this, it has even been said, that, singly, it will attack and conquer a sparrow. What boy who reads this number of the History, especially if he lives in the country, will not remember the battles he has had with the hornet, and the number of times he has had to retreat before this little enemy; and then again, under the promptings of ambition, revenge, and a little mischief, has renewed the encounter with stones and clubs, and finally conquered by destroying the nest; but in many instances not without carrying away from the conflict a swollen eye or limb. The nest is curiously constructed. It is perfectly tight, except at the bottom, where there is a little hole, at which the hornet passes out and in. The nest is ordinarily built upon the branch of a small tree or bush, in the corners of the fence, or under the eaves of buildings.

A BEAR ROBBING A BEE HIVE.

In the history of the bear, the reader will recollect, it was stated that this animal is extravagantly fond of honey. In the engraving at the bottom of the thirty-sixth plate, we have evidence of Bruin's love for honey. He is here caught in the very act of robbing a bee hive. He has succeeded in turning the old fashioned straw hive upside down. From the appearance of the bees about his mouth, it is evident he will have a hot time of it. He will need one hand to hold the hive, and the other to repel the bees who are bent upon resisting his depredations. He appears rather reluctant to put his nose into the hive to get the honey. He fears a wrap upon it, and a dab in the eye. If the whole colony get roused, the thief and the robber will be compelled to retreat.

It is proper, perhaps, that the history of the honey bee, this curious and industrious little animal, should be given in this place.

The domestic bee differs in a variety of particulars from most other animals, and admits a threefold description, under its various characters of *queen bee*, *drone bee*, and *working bee;* for though this last kind is, strictly speaking, the only honey bee, yet as all the three kinds are found, and seem to be necessary, in every community or hive of bees, they go under the same general name of *apis mellifica*, while at the same time they differ so much from each other, (more indeed than some different species of the same genus of other animals,) that a particular and separate description of each is necessary. The drones may easily be distinguished from the common or working bees. They are both larger and longer in the body. Their heads are

round, their eyes full, and their tongues short. The form of the belly differs from those of both queen and common bees; and their color is darker than either. They have no sting, and they make a much greater noise when flying than either the queen or common bees; a peculiarity of itself sufficient to distinguish them. Other writers on this subject have asserted, that the dissection of the drone gives as great proof of its being the male, as that of the queen does of her being female.

The queen is easily distinguished from all other bees in the hive, by the form, size, and color of her body. She is considerably longer, and her wings are much shorter, in proportion to her body, than those of the other bees. The wings of both common bees and drones cover their whole bodies, whereas those of the queen scarcely reach beyond the middle, ending about the third ring of the belly. Her hinder part is far more tapering than those of the other bees; her belly or legs are yellower, and her upper parts of a much darker color than theirs. She is also furnished with a sting, though some authors assert that she has none, having been induced to form this opinion because she is extremely pacific; so much so indeed, that one may handle her and even tease her as much as he pleases, without provoking her resentment. The omniscient Governor of nature has wisely ordained this majestic insect to be of a pacific disposition; for, were she otherwise, were she like the other bees, of so irritable a temper as to draw her sting on every occasion, and to leave it in the body of her antagonist, it would prove of dangerous and often fatal consequences to the whole hive; for every bee, after losing her sting, dies within a day or two at the utmost. The queen bee is solemn and calm in her deportment. A young queen is a great deal smaller in size than a full-grown one; being not much longer than a common bee, and is therefore not so easily observed when sought for. When only three or four days old, she is very quick in her

motions, and runs very fast; but when pregnant with eggs, she becomes very large, and her body is heavy.

The working or common bee is smaller than either the queen or the drone bee; and, as well as these, consists of three parts, viz: the head, which is attached by a narrow kind of neck to the rest of the body; the breast or middle part; and the belly, which is nearly separated from the breast by an insection or division, and connected with it by another narrow neck or junction. There are two eyes in the head, of an oblong figure, black, transparent, and immoveable. The mouth and jaws, like those of some species of fish, open to the right and left, and serve instead of hands, to carry out of the hive whatever encumbers or offends them. In the mouth there is a long proboscis, or trunk, with which the bees suck up the sweets from the flowers. They have four wings fastened to their middle part, by which they are not only enabled to fly with heavy loads, but also to make those well-known sounds and hummings to each other that are supposed to be their only form of speech. They have also six legs fastened to their middle. The two foremost of these are the shortest, and with these they unload themselves of their treasures. The two in the middle are somewhat longer, and the two last are longest. On the outside of the middle joint of these last, there is a small cavity in the form of a narrow spoon, in which the bees collect by degrees those loads of wax they carry home to their hives. This hollow groove is peculiar to the working bee. Neither the queen nor the drones have any resemblance of it. The tibiæ of the hind legs are ciliated, and transversely streaked on the inside. Each foot terminates in two hooks, with their points opposite to each other; in the middle of these hooks there is a little thin appendix, which, when unfolded, enables the insects to fasten themselves to glass, or the most polished bodies. This part they likewise employ for transmitting the small particles of crude wax, which they find upon flowers, to

the cavity in their thighs. The belly is ornamented with six rings; and contains, besides the intestines, the honey-bladder, the venom-bladder, and the sting. The honey-bladder is a reservoir, into which is deposited the honey that the bee sips from the cups of the flowers after it has passed through the proboscis, and through the narrow pipes that connect the head, breast, and belly of the bee. This bladder, when full, is of the size of a small pea, and is so transparent, that the color of the honey can be distinguished through it. The sting is situated at the extremity of the belly, and the head or root of it is placed contiguous to the small bladder that contains the venom, connected to the belly by certain small muscles, by means of which the bee can dart it out and draw it in with great force and quickness. In length it is about the sixth part of an inch. These working bees may be said to compose the whole community, except in the season of the drones, which hardly lasts three months. During all the other nine months, there are no other bees in the hive except them and the queen. The whole labor of the hive is performed by them. They build the combs, collect the honey, bring it home, and store it up in their waxen magazines. They rear up the eggs to produce young queens, common bees, and drones; they carry out all incumbrances that are in the hives; they defend the community against enemies of every kind, and kill all the drones.

When the bees begin to work in their hives, they divide themselves into four companies; one of which roves in the fields in search of materials; another employs itself in laying out the bottom and partitions of their cells; a third is employed in making the inside smooth from the corners and angles; and the fourth company brings food for the rest, or relieves those who return with their respective burdens. But they are not kept constant to one employment; they often change the tasks assigned them; those that have been at work being permitted to go abroad, and those that

have been in the fields already, take their places. They seem even to have signs by which they understand each other; for when any of them want food, it bends down its trunk to the bee from whom it is expected, which then opens its honey-bag, and lets some drops fall into the other's mouth, which is at that time open to receive it.

Honey is originally a juice digested in plants, which sweats through their pores, and chiefly in their flowers, or is contained in reservoirs in which nature stores it. The bees sometimes penetrate into these stores, and at other times find the liquor exuded. This they collect in their stomachs; so that, when loaded with it, they seem, to an attentive eye, to come home without any booty at all. Besides the liquor already mentioned, which is obtained from the flowers of plants, another substance, called honey dew, has been discovered, of which the bees are equally fond. From whatever source the bees have collected their honey, the instant they return home, they seek cells in which they may disgorge and deposit their loads. They have two sorts of stores; one of which consists of honey laid up for the winter, and the other of honey intended for accidental use in case of bad weather, and for such bees as do not go abroad in search of it. Their method of securing each of these is different. They have in each cell a thicker substance, which is placed over the honey to prevent its running out of the cell; and that substance is raised gradually as the cell is filled, till the bees, finding that the cell cannot contain any more, close it with a covering of wax, not to be opened till times of want, during the winter.

The balls which we see attached to the legs of bees returning to the hives, are not wax, but a powder collected from the stamina of flowers, not yet brought to the state of wax. The substance of these balls, heated in any vessel, does not melt as wax would do, but becomes dry and hardens; it may even be reduced to a coal. If thrown into water it will sink, whereas wax swims. To reduce

this crude substance into wax, it must be digested in the body of the bee. Every bee, when it leaves the hive to collect this precious store, enters into the cup of the flower, particularly such as seem charged with the greatest quantity of this yellow farina. As the animal's body is covered over with hair, it rolls itself within the flower, and quickly becomes quite covered with the dust, which it soon after brushes off with its two hind legs, and kneads it into two little balls. In the thighs of the hinder legs there are two cavities edged with hair; and into these, as into a basket, the animal sticks its pellets. Thus employed, the bee flits from flower to flower, increasing its store, and adding to its stock of wax, until the ball on each thigh becomes as big as a grain of pepper; by this time having got a sufficient load, it returns, making the best of its way to the hive. After the bees have brought home this crude substance, they eat it by degrees; or, at other times, three or four bees come and ease the loaded bee, by eating each of them a share, the loaded bee giving them a hint so to do. Hunger is not the motive of their thus eating the balls of waxy matter, especially when a swarm is first hived; but it is their desire to provide a speedy supply of real wax for making the combs. At other times, when there is no immediate want of wax, the bees lay this matter up in repositories to keep it in store. When this waxy matter is swallowed, it is by the digestive powers of the bee converted into real wax, which the bees again disgorge as they work it up into combs; for it is only while thus soft and pliant from the stomach, that they can fabricate it properly. That the wax thus employed is taken from the stomach, appears from their making a considerable quantity of comb soon after they are hived, and even on any tree or shrub where they have rested but a short while before their being hived; though no balls were visible on their legs, excepting those of a few which may be just returned from the field. This is farther confirmed by what happened in a swarm

newly hived; for two days together, from the time of their quitting their former home, it rained constantly, insomuch that not one bee was able to stir out during that time; yet, at the end of two days, they had made a comb fifteen or sixteen inches long, and thick in proportion. The crude wax, when brought home to the bees, is often of as different colors as are the flowers from which it is collected; but the new combs are always of a white color, which is afterwards changed only by the impurities arising from the steam, &c., of the bees. Bees collect crude wax, also, for food; for, if this was not the case, there would be no want of wax after the combs are made; but they are observed, even in old hives, to return in great numbers loaded with such matter, which is deposited in particular cells, and is known by the name of bee-bread.

When a queen is removed from a hive, the bees do not immediately perceive it; they continue their labors, "watch over their young, and perform all their ordinary occupations. But, in a few hours, agitation ensues; all appears a scene of tumult in the hive; a singular humming is heard; the bees desert their young, and rush over the surface of the combs with a delirious impetuosity." They have now evidently discovered that their sovereign is gone; and the rapidity with which the bad news spreads through the hive, to the opposite side of the combs, is very remarkable. On replacing the queen in the hive, tranquility is almost instantly restored. The bees, it is worthy of notice, recognise the individual person of their own queen. If another be palmed upon them, they seize and surround her, so that she is either suffocated or perishes by hunger; for it is very remarkable, that the workers are never known to attack a queen bee with their stings. If, however, more than eighteen hours have elapsed before the stranger queen be introduced, she has some chance to escape; the bees at first seize and confine her; but less rigidly; and they soon begin to disperse, and at length leave her to reign over a

hive in which she was at first treated as a prisoner. If twenty-four hours have elapsed, the stranger will be well received from the first, and at once admitted to the sovereignty of the hive. In short, it appears that the bees, when deprived of their queen, are thrown into great agitation; that they wait about twenty hours, apparently in hopes of her return; but that, after this interregnum, the agitation ceases; and they set about supplying their loss by beginning to construct royal cells. It is when they are in this temper, and not sooner, that a stranger queen will be graciously received; and upon her being presented to them, the royal cells, in whatever state of forwardness they may happen to be, are instantly abandoned, and the larvæ destroyed. Reaumur must, therefore, have mistaken the result of his own experiments, when he asserts, that a stranger queen is instantly well received, though presented at the moment when the other is withdrawn. He had seen the bees crowding round her at the entrance of the hive, and laying their antennæ over her; and this he seems to have taken for caressing. The structure of the hives he employed prevented him from seeing further; had he used the leaf-hive, or one of similar construction, he would have perceived that the apparent caresses of the guards were only the prelude of actual imprisonment.

After the season of swarming, it is well known, a general massacre of the drones is commenced. Several authors assert that the workers do not sting the drones to death, but merely harass them till they be banished from the hive and perish. M. Huber contrived a glass table, on which he placed several hives, and he was thus able to see distinctly what passed in the bottom of the hive, which is generally dark and concealed; he witnessed a real and furious massacre of the males, the workers thrusting their stings so deep into the bodies of the defenceless drones, that they were obliged to turn on themselves as on a pivot, before they could extricate them. The work of death com-

menced in all the hives much about the same time. It is not, however, by a blind and indiscriminate instinct that the workers are impelled thus to sacrifice the males; for if a hive be deprived of its queen, no such massacre takes place in it, but the males are allowed to survive the winter.

The bees are nearly alike in all parts of the world, yet there are differences worthy our notice. In Guadaloupe, the bee is less by one half than the European, and more black and round. They have no sting, and make their cells in hollow trees, where, if the hole they meet with is too large, they form a sort of waxen house, of the shape of a pear, and in this they lodge and store their honey, and lay their eggs. They lay up their honey in waxen vessels of the size of a pigeon's egg, of a black or deep violet color; and these are so joined together, that there is no space left between them.

The honey never congeals, but is fluid, of the consistence of oil, and the color of amber. Resembling these, there are found little black bees, without a sting, in all the tropical climates; and though these countries are replete with bees, like our own, yet those form the most useful and laborious tribe in that part of the world. The honey they produce is neither so unpalatable, nor so surfeiting as ours; and the wax is so soft, that it is only used for medicinal purposes, it being never found hard enough to form into candies, as in Europe.

Plate 37.

THE GLUTTON.

THE POLE CAT

THE GLUTTON.

PLATE XXXVII.—THE GLUTTON.

The Glutton, which is so called from its voracious appetite, is an animal found as well in the north of Europe and Siberia, as in the northern parts of America, where it has the name of the *carcajou*. Amidst the variety of descriptions which have been given of it, no very just idea can be formed of its figure; and, indeed, some naturalists, among whom was Ray, entirely doubted of its existence. From the best accounts, however, we have of it, the body is thick and long, the legs short; it is black along the back, and of a reddish brown on the sides; its fur is held in the highest estimation, for its softness and beautiful gloss; the tail is bushy, like that of the weasel, but rather shorter; and its legs and claws are better fitted for climbling trees, than for running along the ground. Thus far it entirely resembles the weasel; and its manner of taking its prey is also by surprise, and not by pursuit.

Scarcely any of the animals with short legs and long bodies pursue their prey; but, knowing their own incapacity to overtake it by swiftness, either creep upon it in its retreats, or wait in ambush and seize it with a bound. The Glutton, from the make of its legs, and the length of its body, must be particularly slow; and, consequently, its only resource is in taking its prey by surprise. All the rest of the weasel kind, from the smallness of their size, are better fitted for a life of insidious rapine than this; they can pursue their prey into its retreats, they can lurk unseen among the branches of trees, and hide themselves with ease under the leaves: but the Glutton is too large to follow small prey into their retreats; nor would such, even if obtained, be sufficient to sustain it. For these reasons, therefore, this

animal seems naturally compelled to the life for which it has long been remarkable. Its only resource is to climb a tree, which it does with great ease, and there it waits with patience until some large animal passes underneath, upon which it darts down with unerring certainty, and destroys it.

It is chiefly in North America that this voracious creature is seen lurking among the thick branches of trees, in order to surprise the deer, with which the extensive forests of that part of the world abound. Endued with a degree of patience equal to its rapacity, the Glutton singles out such trees as it observes marked by the teeth or the antlers of the deer; and is known to remain there watching for several days together. If it has fixed upon a wrong tree, and finds that the deer have either left that part of the country, or cautiously shun the place, its reluctantly descends, pursues the beaver to its retreat, or even ventures into the water, in pursuit of fishes. But if it happens that, by long attention, and keeping close, at last the elk or the reindeer happens to pass that way, it at once darts down upon them, sticks its claws between their shoulders, and remains there unalterably firm. It is in vain that the large frightened animal increases its speed, or threatens with its branching horns; the Glutton having taking possession of its post, nothing can drive it off; its enormous prey drives rapidly along amongst the thickest woods, rubs itself against the largest trees, and tears down the branches with its expanded horns; but still its insatiable foe sticks behind, eating its neck, and digging its passage to the great blood-vessels that lie in that part. Travellers, who wander through those deserts, often see pieces of the Glutton's skin sticking to the trees, against which it was rubbed by the deer. But the animal's voracity is greater than its feelings, and it never seizes without bringing down its prey. When, therefore, the deer, wounded and feeble with the loss of blood, falls, the Glutton is seen to make up for its

former abstinence by its present voracity. As it is not possessed of a feast of this kind every day, it resolves to lay in a store to serve it for a good while to come. It is, indeed, amazing how much one of these animals can eat at a time! That which was seen by Mr. Klein, although without exercise or air, although taken from its native climate, and enjoying but an indifferent state of health, was yet seen to eat thirteen pounds of flesh every day, and yet remain unsatisfied. We may, therefore, easily conceive how much more it must devour at once, after a long fast, of a food of its own procuring, and in the climate most natural to its constitution. We are told, accordingly, that from being a lank, thin animal, which it naturally is, it then gorges in such quantities, that its belly is distended, and its whole figure seems to alter. Thus voraciously it continues eating, till incapable of any other animal function, it lies totally torpid by the animal it has killed; and in this situation continues for two or three days. In this loathsome and helpless state, it finds its chief protection from its horrid smell, which few animals care to come near; so that it continues eating and sleeping till its prey be devoured, bones and all, and then it mounts a tree, in quest of another adventure.

The Glutton, like many others of the weasel kind, seems to prefer the most putrid flesh to that newly killed; and such is the voraciousness of this hateful creature, that, if its swiftness and strength were equal to its rapacity, it would soon thin the forest of every other living creature. But, fortunately, it is so slow, that there is scarce a quadruped that cannot escape it, except the beaver. This, therefore, it very frequently pursues upon land; but the beaver generally makes good its retreat by taking to the water, where the Glutton has no chance to succeed. This pursuit only happens in summer; for in winter all that remains is to attack the beaver's house, as at that time it never stirs from home. This attack, however, seldom succeeds;

for the beaver has a covert way bored under the ice, and the Glutton has only the trouble and disappointment of sacking an empty town.

A life of necessity generally produces a good fertile invention. The Glutton, continually pressed by the call of appetite, and having neither swiftness nor activity to satisfy it, is obliged to make up by stratagem the defects of nature. It is often seen to examine the traps and the snares laid for other animals, in order to anticipate the fowlers. It is said to practice a thousand arts to procure its prey, to steal upon the retreats of the reindeer, the flesh of which animal it loves in preference to all others; to lie in wait for such animals as have been maimed by the hunters; to pursue the isatis while it is hunting for itself; and when the animal has run down its prey, to come in and seize upon the whole, and sometimes to devour even its poor provider; when these pursuits fail, even to dig up the graves, and fall upon the bodies interred there, devouring them, bones and all. For these reasons, the natives of the countries where the Glutton inhabits, hold it in utter detestation, and usually term it the vulture of quadrupeds. And yet, it is extraordinary enough, that, being so very obnoxious to man, it does not seem to fear him. We are told by Gemelin of one of these coming up boldly and calmly where there were several persons at work, without testifying the smallest apprehension, or attempting to run until it had received several blows, that at last totally disabled it. In all probability it came among them seeking its prey; and, having been used to attack animals of inferior strength, it had no idea of a force superior to its own. The Glutton, like all the rest of its kind, is a solitary animal; and is never seen in company except with its female, with which it couples in the midst of winter. The latter goes with young about four months, and brings forth two or three at a time. They burrow in holes as the weasel; and the male and female are generally found together,

both equally resolute in defence of their young. Upon this occasion the boldest dogs are afraid to approach them; they fight obstinately, and bite most cruelly. However, as they are unable to escape by flight, the hunters come to the assistance of the dogs, and easily overpower them. Their flesh, it may readily be supposed, is not fit to be eaten; but the skins amply recompense the hunters for their toil and danger. The fur has the most beautiful lustre that can be imagined, and is preferred before all others, except that of the Siberian fox, or the sable. Among other peculiarities of this animal, Linnæus informs us, that it is very difficult to be skinned; but from what cause, whether its abominable strench, or the skin's tenacity to the flesh, he has not thought fit to inform us.

THE POLECAT

PLATE XXXVII.—THE POLECAT.

THE Polecat is larger than the weasel, the ermine, or the ferret, being one foot five inches long; whereas the weasel is but six inches, the ermine nine, and the ferret eleven inches. It so much resembles the ferret in form, that some have been of opinion they were one and the same animal; nevertheless, there are a sufficient number of distinctions between them: it is, in the first place, larger than the ferret; it is not quite so slender, and has a blunter nose; it differs also internally, having but fourteen ribs, whereas the ferret has fifteen; and wants one of the breast bones, which is found in the ferret: however, warreners assert, that the Polecat will mix with the ferret; and they are sometimes obliged to procure an intercourse between these two animals, to improve the breed of the latter, which, by long confinement, is sometimes seen to abate of its rapacious disposition. Mr. Buffon denies that the ferret will admit the Polecat; yet gives a variety under the name of both animals, which may very probably be a spurious race between the two.

However this may be, the Polecat seems by much, the more pleasing animal of the two; for although the long slender shape of all these vermin tribes gives them a very disagreeable appearance, yet the softness and color of the hair in some of them atones for the defect, and renders them, if not pretty, at least not frightful. The Polecat, for the most part, is of a deep chocolate color; it is white about the mouth; the ears are short, rounded, and tipped with white; a little beyond the corners of the mouth a stripe begins, which runs backward, partly white and partly yellow: its hair, like that of all this class, is of two

sorts, the long and the furry; but in this animal the two kinds are of different colors; the longest is black, and the shorter yellowish: the throat, feet, and tail, are blacker than any other parts of the body; the claws are white underneath, and brown above; and the tail is about two inches and a half.

It is very destructive to young game of all kinds; but the rabbit seems to be its favorite prey: a single Polecat is often sufficient to destroy a whole warren; for, with that insatiable thirst for blood which is natural to all the weasel kind, it kills much more than it can devour; and I have seen twenty rabbits at a time taken out dead, which they had destroyed, and that by a wound which was hardly perceptible. Their size, however, which is so much larger than the weasel, renders their retreats near houses much more precarious; although I have seen them burrow near a village, so as scarcely to be extirpated. But, in general, they reside in woods or thick brakes, making holes under ground of about two yards deep, commonly ending among the roots of large trees, for greater security. In winter, they frequent houses, and make a common practice of robbing the hen-roost and the dairy.

The Polecat is particularly destructive among pigeons, when it gets into a dove-house: without making so much noise as the weasel, it does a great deal more mischief; it despatches each with a single wound in the head; and, after killing a great number, and satiating itself with their blood, it then begins to think of carrying them home. This it carefully performs, going and returning, and bringing them one by one to its hole; but if it should happen that the opening by which it got into the dove-house be not large enough for the body of the pigeon to get through, this mischievous creature contents itself with carrying away the heads, and makes a most delicious feast upon the brains.

It is not less fond of honey; attacking the hives in win-

ter, and forcing the bees away. It does not remove far from houses in winter, as its prey is not so easily found in the woods during that season. The female brings forth her young in summer, to the number of five or six at a time; these she soon trains to her own rapacious habits, supplying the want of milk, which no carnivorous quadruped has in plenty, with the blood of such animals as she happens to seize. The fur of this animal is considered as soft and warm; yet it is in less estimation than some of a much inferior kind, from its offensive smell, which can never be wholly removed, or suppressed. The Polecat seems to be an inhabitant of the temperate climates, scarcely any being found towards the north, and but very few in the warmer latitudes. The species appear to be confined in Europe, from Poland to Italy. It is certain, that these animals are afraid of the cold, as they are often seen to come into houses in winter, and as their tracks are never found in the snow, near their retreats. It is probable, also, that they are afraid of heat, as they are but thinly scattered in the southern climate.

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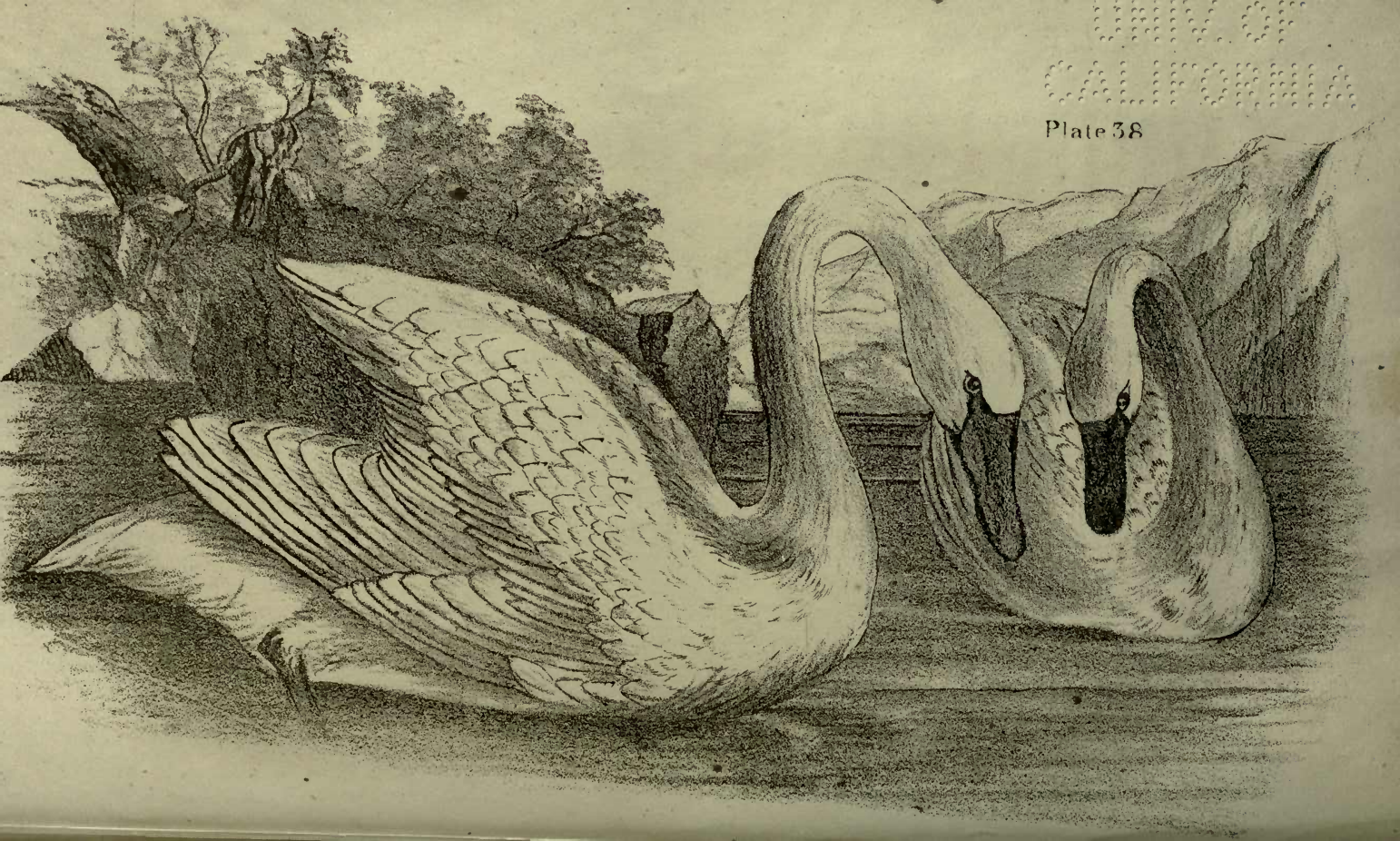
Plate 38



THE SWAN.

PLATE XXXVIII.—THE SWAN.

No bird makes a more indifferent figure upon land, or a more beautiful one in the water, than the Swan. When it ascends from its favorite element, its motions are awkward, and its neck is stretched forward with an air of stupidity; but when it is seen smoothly sailing along the water, commanding a thousand graceful attitudes, moving at pleasure without the smallest effort; "when it proudly rows its state," as Milton has it, "with arched neck, between its white wings mantling," there is not a more beautiful figure in all nature. In the exhibition of its form, there are no broken or harsh lines, no constrained or catching motions; but the roundest contours, and the easiest transitions; the eye wanders over every part with insatiable pleasure, and every part takes a new grace with a new motion.

This fine bird has long been rendered domestic; and it is now a doubt whether there be any of the tame kind in a state of nature. The wild Swan, though so strongly resembling this in color and form, is yet a different bird; for it is very differently formed within. The wild Swan is less than the tame by almost a fourth; for as the one weighs twenty pounds, the other only weighs sixteen pounds and three quarters. The color of the tame Swan is all over white; that of the wild bird is, along the back and the tips of the wings, of an ash-color. But these are slight differences, compared to what are found upon dissection. In the tame Swan, the windpipe sinks down into the lungs in the ordinary manner; but in the wild, after a strange and wonderful contortion, like what we have seen in the crane, it enters through a hole formed in the breast-bone; and

being reflected therein, returns by the same aperture; and being contracted into a narrow compass by a broad and bony cartilage, it is divided into two branches, which, before they enter the lungs, are dilated, and, as it were, swollen out into two cavities.

Such is the extraordinary difference between these two animals, which externally seem to be of one species. Whether it is in the power of long-continued captivity and domestication to produce this strange variety, between birds otherwise the same, I will not take upon me to determine. But certain it is, that our tame Swan is nowhere to be found, at least in Europe, in a state of nature.

As it is not easy to account for this difference of conformation, so it is still more difficult to reconcile the accounts of the ancients with the experience of the moderns, concerning the vocal powers of this bird. The tame Swan is one of the most silent of all birds; and the wild one has a note extremely loud and disagreeable. It is probable, the convolutions of the windpipe may contribute to increase the clangor of it; for such is the harshness of its voice, that the bird from thence has been called the hooper. In neither is there the smallest degree of melody; nor have they, for above this century, been said to give specimens of the smallest musical abilities; yet, notwithstanding this, it was the general opinion of antiquity, that the Swan was a most melodious bird; and that even to its death, its voice went on improving. It would show no learning to produce what they have said upon the music of the Swan; it has already been collected by Aldrovandus; and still more professedly by the Abbe Gedoyn, in the Transactions of the Academy of the Belles Lettres. From these accounts it appears, that, while Plato, Aristotle, and Diodorus Siculus, believed the vocality of the Swan, Pliny and Virgil seem to doubt that received opinion. In this equipoise of authority Aldrovandus seems to have determined in favor of the Greek philosophers; and the form of the windpipe

in the wild swan, so much resembling a musical instrument, inclined his belief still more strongly. In aid of this also, came the testimony of Pendasius, who affirmed, that he had often heard Swans sweetly singing in the lake of Mantua, as he was rowed up and down in a boat; as also of Olaus Wormius, who professed that many of his friends and scholars had heard them singing. "There was," says he, "in my family, a very honest young man, John Rostorph, a student in divinity, and a Norwegian by nation. This man did, upn his credit, and with the interposition of an oath, solemnly affirm, that once, in the territory of Dronten, as he was standing on the sea-shore, early in the morning, he heard an unusual and sweet murmur, composed of the most pleasant whistlings and sounds; he knew not at first whence they came, or how they were made, for he saw no man near to produce them; but, looking round about him, and climbing to the top of a certain promontory, he there espied an infinite number of Swans gathered together in a bay, and making the most delightful harmony; a sweeter in all his life-time he had never heard." These were accounts sufficient at least to keep opinion in suspense, though in contradiction to our own experience: but Aldrovandus, to put, as he supposed, the question past all doubt, gives us the testimony of a countryman of our own, from whom he had the relation. This honest man's name was Mr. George Braun, who assured him, that nothing was more common in England, than to hear Swans sing; that they were bred in great numbers in the sea near London; and that every fleet of ships that returned from their voyages from distant countries, were met by Swans, that came joyfully out to welcome their return, and salute them with a loud and cheerful singing! It was in this manner that Aldrovandus, that great and good man, was frequently imposed upon by the designing and the needy: his unbounded curiosity drew round him people of every kind, and his generosity was as

ready to reward falsehood as truth.—Poor Aldrovandus! after having spent a vast fortune, for the purposes of enlightening mankind; after having collected more truth, and more falsehood, than any man ever did before him, he little thought of being reduced at last to want bread, to feel the ingratitude of his country, and to die a beggar in a public hospital!

Thus it appears that our modern authorities, in favor of the singing of Swans, are rather suspicious, since they are reduced to this Mr. G. Braun, and John Rostorph, the native of a country remarkable for ignorance and credulity. It is probable the ancients had some mythological meaning in ascribing melody to the Swan; and as for the moderns, they scarcely deserve our regard. The Swan, therefore, must be content with that share of fame which it possesses on the score of its beauty; since the melody of its voice, without better testimony, will scarcely be admitted by even the credulous.

This beautiful bird is as delicate in its appetites, as elegant in its forms. Its chief food is corn, bread, herbs growing in the water, and roots and seeds, which are found near the margin. It prepares a nest in some retired part of the bank, and chiefly where there is an islet in the stream. This is composed of water-plants, long grass, and sticks; and the male and female assist in forming it with great assiduity. The swan lays seven or eight eggs, white, much larger than those of a goose, with a hard, and sometimes a tuberous, shell. It sits near two months before its young are excluded; which are ash-colored when they first leave the shell, and for some months after. It is not a little dangerous to approach the old ones, when their little family are feeding round them. Their fears, as well as their pride, seem to take the alarm; and they have sometimes been known to give a blow with their pinion, that has broke a man's leg or arm.

It is not till they are a twelve-month old that the young

Swans change their color with their plumage. All the stages of this bird's approach to maturity are slow, and seem to mark its longevity. It is two months hatching; a year in growing to its proper size; and if, according to Pliny's observation, that those animals that are longest in the womb are the longest lived, the Swan is the longest in the shell of any bird we know, and is said to be remarkable for its longevity. Some say, that it lives three hundred years; and Willoughby, who is in general diffident enough, seems to believe the report. A goose, as he justly observes, has been known to live a hundred; and the Swan, from its superior size, and from its harder, firmer flesh, may naturally be supposed to live still longer.

Swans were formerly held in such great esteem in England, that by an act of Edward the Fourth, none, except the son of the king, was permitted to keep a swan, unless possessed of five marks a year. By a subsequent act, the punishment for taking their eggs was imprisonment for a year and a day, and a fine at the king's will. At present they are but little valued for the delicacy of their flesh; but many are still preserved for their beauty. We see multitudes on the Thames and Trent; but no where greater numbers than on the salt water inlet of the sea near Abbotsbury, in Dorsetshire.

There are many modes practised in the United States of destroying these princely ornaments of the water. In shooting them whilst flying with the wind, Lawson, a traveller in Carolina, says: "they are the most difficult bird to kill I know, it being frequently necessary to take sight ten or twelve feet before the bill." This I should consider an unnecessary allowance, unless driven by a hurricane, but, on ordinary occasions, the bill is aimed at, and if going with a breeze, at a long shot, a foot before the bill would be quite sufficient. The covering is so extremely thick on old birds, that the largest *drop* shot will rarely kill, unless the Swan is struck in the neck or under the

wing, and I have often seen large masses of feathers torn from them, without for an instant impeding their progress.

When wounded in the wing alone, a large Swan will readily beat off a dog, and is more than a match for a man in four feet water, a stroke of the wing having broken an arm, and the powerful feet almost obliterating the face of a good sized duck shooter. They are often killed by rifle balls thrown from the shore into the feeding column, and as a ball will *ricochet* on the water for several hundred yards, a wing may be disabled at the distance of half a mile.

These birds are often brought within shooting range, by sailing down upon them whilst feeding, and, as they arise against the wind, and cannot leave the water for fifteen or twenty yards, against which they strike their enormous feet and wings most furiously, great advantage is gained in distance. They must be allowed on all occasions to turn the side, for a breast shot rarely succeeds in entering.

When two feeding coves are separated by a single point, by disturbing the Swans in one or the other occasionally, they will pass and repass very closely to this projection of land, and usually taking as they do, the straight line, each gunner to prevent dispute, names the bird he will shoot at.

In winter, boats covered by pieces of ice, the sportman being dressed in white, are paddled or allowed to float during the night, into the midst of a flock, and they have been oftentimes killed, by being knocked on the head and neck by a pole. There is, however, much danger in this mode, as others may be engaged in like manner, but shooting, and at a short distance, the persons might not be distinguished from the Swan. These birds seem well aware of the range of a gun, and I have followed them in a skiff for miles, driving a body of several hundreds before me.

without the possibility of getting quite within shooting distance.

The skins of Swans still covered by the down, which is very thick, are often used in our country for bonnets and tippets, and at Hudson's Bay, a great trade formerly existed with the down and quills. The Indians also employ the skins for dresses for their women of rank, and the feathers for ornaments for the head.

THE DEATH SONG OF THE SWAN.

BY CHARLES WEST THOMSON.

Farewell, ye summer streams where I have sported
Full oft by mossy rock and flowery dell,
I lave no more where once my flock resorted—
Ye summer streams farewell!

No more upon your verdant banks reclining,
I see your breast reflect the clear blue skies,—
Ye quiet waters in the sun-beams shining,
Your humble votary dies

Yet 'mid your lovely scenes where fairies wander,
In many a gay and sportive moonlight throng,
I pause on life's dim verge awhile to ponder—
Accept my latest song.

Accept the lay—the soft melodious numbers,
Vouchsafed by Nature to my parting breath,
The gentle prelude to unbroken slumbers—
The symphony of death.

I go, no more to breathe among the mountains
The ambrosial fragrance, which the wild flowers fling,
I go, no more beneath the woodland fountains
To wet my snowy wing.

Yet tho' no more I rest in shady bowers
Where my youth's day-spring saw the waters shine,
When death has come, beneath the summer flowers,
O quiet sleep is mine.

The wild wave from the rock shall still be springing,
The mountain mists shall hover o'er the dell,
But I amidst them no more shall be winging—
My native streams farewell!

THE WALRUS, OR MORSE.

PLATE XXXIX.—THE WALRUS, OR MORSE.

The name of sea cow, or sea horse, by which the Walrus is most generally known, has been very wrongly applied; since the animal which it denotes has not the least resemblance to the land animals of that name: the denomination of sea elephant, which others have given it, is much better imagined, as it is founded on a singular and very apparent character. The Walrus, like the elephant, has two large ivory tusks, weighing from ten to thirty pounds each, which shoot from the upper jaw; its head also is formed, or rather deformed, like that of the elephant, and would entirely resemble it in that part if it had a trunk; but the Walrus is deprived of that instrument, which serves the elephant in the place of an arm and hand, and has real arms to make use of. These members, like those of the seal, are shut up within the skin, so that nothing appears outwardly but its hands and feet: its body is long and tapering, thickest towards the neck: the whole body is clothed with a short hair; the toes, and the hands, or feet, are covered with a membrane, and terminated by short and sharp pointed claws. On each side of the mouth are large bristles in the form of whiskers: its tongue is hollowed, the concha of the ears are wanting, &c.; so that, excepting the two great tusks, and the cutting teeth, which it is deficient in above and below, the Walrus in every other particular perfectly resembles the seal: it is only much larger and stronger, being commonly from twelve to sixteen feet in length, and eight or nine in circumference, and sometimes reaching eighteen feet in length, with a proportionable girth; whereas the largest seals are no more than seven or eight feet. The Walrus, also, is generally seen to frequent the same places as the seals are known to

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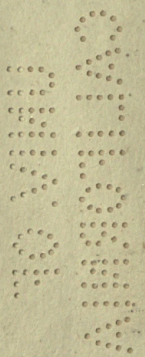
THE WALRUS OR SEA HORSE.



reside in, and are almost always found together. They have the same habitudes in every respect, excepting that there are fewer varieties of the Morse than the seal: they likewise are more attached to one particular climate, and are rarely found except in the northern seas.

"There was formerly," says Zordrager, "great plenty of Morses and seals in the bays ot Horisont and Klock, but at present there are very few. Both these animals quit the water in the summer, and resort to the neighboring plains, where there are flocks of them, from eighty to two hundred, particularly Morses, which will remain there several days together, till hunger obliges them to return to the sea. This animal externally resembles the seal, but it is stronger and much larger: like that, it has five toes to each paw, but its claws are shorter, and its head thicker and rounder; its skin is thick, wrinkled, and covered with very short hair of different colors; its upper jaw is armed with two teeth about half an ell or an ell in length; these tusks, which are hollow at the root, become larger as the animal grows older. Some of them are found to have but one, the other being torn out in fighting, or perhaps fallen out through age. This ivory generally brings a greater price than that of the elephant, as it is of a more compact and harder substance. The mouth of this animal is like that of the ox, and furnished with hairs which are hollow, pointed, and about the thickness of a straw. Above the mouth are two nostrils, through which the animal spouts the water like a whale. There are a great number of Morses towards Spitzbergen, and the profit that is derived from their teeth and fat fully repays the trouble of taking them, for the oil is almost as much valued as that produced from the whale. When the hunter is near one of these animals in the water, or on the ice, he darts a very strong harpoon at it, which, though made expressly for the purpose, often slips over its hard and thick skin; but if it has penetrated into it, they haul the animal towards the boat, and kill it with a sharp

and strong lance. The Morse is generally heavier than the ox, and as difficult to pursue as the whale, the skin of which is more easily pierced. For this reason, they always endeavor to wound it in the most tender part, and aim at its eyes: the animal, obliged by this motion to turn its head, exposes its breast to the hunter, who immediately strikes very forcibly in that part, and draws the lance out again as quick as possible, for fear it should seize the lance with its teeth, and wound those that attack it. Formerly, before these animals were so greatly persecuted, they advanced so far on shore, that when it was high water, they were at a great distance from the sea; and at low water, being at a still greater, the hunters easily approached them and killed greater numbers. The hunters, in order to cut off their retreat to the sea, and after they had killed several, made a kind of barrier of their dead bodies, and in this manner often killed three or four hundred in a season. The prodigious quantity of bones spread over the shores, sufficiently proves how numerous these animals were in former times. When they are wounded, they become extremely furious, often biting the lances in pieces with their teeth, or tearing them out of the hands of their enemies; and when at last they are strongly engaged, they put their head betwixt their paws, or fins, and in this manner roll into the sea. When there is a great number together, they are so bold as to attack the boats that pursue them, bite them with their teeth, and exert all their strength to overturn them."

Captain Cook saw a herd of them floating on an ice island off the northern coasts of the American continent. "They lie," says he, "in herds of many hundreds, upon the ice, huddling over one another like swine; and roar or bray so loud, that in the night, or in foggy weather, they gave us notice of the vicinity of the ice before we could see it. We never found the whole herd asleep, some being always on the watch. These, at the approach of

the boat, would wake those next to them; and the alarm being thus gradually communicated, the whole herd would be awaked. But they were seldom in a hurry to get away, till after they had been once fired at. They then would tumble over one another into the sea, in the utmost confusion. And if we did not, on the first discharge, kill those we fired at, we generally lost them, though mortally wounded. Vast numbers of these animals would follow and come close up to the boats; but the flash of a musket in the pan, or even the pointing of a musket at them, would send them down in an instant. The female Walrus will defend her offspring to the very last, and at the expense of her own life, whether in the water or upon the ice. Nor will the young one quit the dam, though she be dead; so that, if one be killed, the other is a certain prey."

We find the Walrus can live, at least for some time, in a temperate climate. We do not know how long it goes with young, but if we judge by the time of its growth and size, we must suppose it to be upwards of nine months. It cannot continue in the water for a long time together, and is obliged to go on shore to suckle its young, and for other occasions. When they meet with a steep shore, or pieces of ice to climb up, they make use of their tusks to hold by, and their feet to drag along the heavy mass of their body. They are said to feed upon the shell-fish which are at the bottom of the sea, and to grub them up with their strong tusks. Others say, that they live on the broad leaves of a certain vegetable which grows in the sea, and that they eat neither flesh nor fish. But I imagine all these opinions have but a weak foundation; and there is reason to think, that the Walrus, like the seal, lives on prey, especially herrings and other fish, for it does not eat at all when upon land, and it is chiefly hunger which obliges it to return to the sea.

THE FROG.

PLATE XL.—THE FROG.

The external of the Frog is too well known to need a description. Its power of taking large leaps is remarkably great, compared to the bulk of its body. It is the best swimmer of all four-footed animals; and nature hath finely adapted its parts for those ends, the arms being light and active, the legs and thighs long, and furnished with very strong muscles.

If we examine this animal internally, we shall find that it has a very little brain for its size; a very wide swallow; a stomach seemingly small, but capable of great distention. The heart in the Frog, as in all other animals that are truly amphibious, has but one ventricle; so that the blood can circulate without the assistance of the lungs, while it keeps under water. The lungs resemble a number of small bladders joined together, like the cells of a honey-comb: they are connected to the back by muscles, and can be distended or exhausted at the animal's pleasure.

The common brown Frog begins to couple early in the season, and as soon as the ice is thawed from the stagnant waters. In some places the cold protracts their genial appetite till April; but it generally begins about the middle of March. The male is usually of a grayish brown color; the female is more inclining to yellow, speckled with brown.

A single female produces from six to eleven hundred eggs at a time; and, in general, she throws them all out together, by a single effort; though sometimes she is an hour in performing this task. While she is thus bringing forth, it may be observed, that the male acts the part of a

Plate 40

midwife, and promotes the expulsion of the eggs by working with his thumbs, and compressing the female's body more closely. The eggs which were compressed in the womb, upon being emitted, expand themselves into a round form, and drop to the bottom of the water: while the male swims off, and strikes with his arms as usual, though they had continued so long in a state of violent contraction.

The egg, or little black globe, which produces a tadpole, is surrounded with two different kinds of liquor. That which immediately surrounds the globe is clear and transparent, and contained in its proper membrane; that which surrounds the whole is muddy and mucus. The transparent liquor serves for the nourishment of the tadpole from time to time; and answers the same purposes that the white of the egg does to birds. The tadpoles, when this membrane is broken, are found to adhere with their mouth to part of it; and when they get free, they immediately sink to the bottom of the water, never being able to get to the top after, while they continue in their tadpole form.

But to return: When the spawn is emitted and impregnated by the male, it drops as was said, to the bottom, and there the white quickly and sensibly increases. The eggs, which during the four first hours suffer no perceptible change, begin then to enlarge and grow lighter; by which means they mount to the surface of the water. At the end of eight hours, the white in which they swim grows thicker, the eggs lose their blackness, and, as they increase in size, somewhat of their spherical form. The twenty-first day, the egg is seen to open a little on one side, and the beginning of a tail to peep out, which becomes more and more distinct every day.

The thirty-ninth day, the little animal begins to have motion; it moves, at intervals, its tail; and it is perceived that the liquor in which it is circumfused, serves it for nourishment. In two days more, some of these little crea-

tures fall to the bottom; while others remain swimming in the fluid around them, while their vivacity and motion is seen to increase. Those which fall to the bottom remain there the whole day; but having lengthened themselves a little, for hitherto they are doubled up, they mount at intervals to the mucus which they had quitted, and are seen to feed upon it with great vivacity. The next day they acquire their tadpole form. In three days more they are perceived to have two little fringes, that serve as fins, beneath the head; and these, in four days after, assume a more perfect form. It is then, also, that they are seen to feed very greedily upon the pond-weed with which they are to be supplied; and, leaving their former food, on this they continue to subsist till they arrive at maturity. When they come to be ninety-two days old, two small feet are seen beginning to bourgeon near the tail: and the head appears to be separate from the body. The next day, the legs are considerably enlarged: four days after, they refuse all vegetable food; their mouth appears furnished with teeth; and their hinder-legs are completely formed. In two days more the arms are completely produced; and now the Frog is every way perfect, except that it still continues to carry the tail. In this odd situation the animal, resembling at once both a frog and a lizard, is seen frequently rising to the surface, not to take food, but to breathe. In this state it continues for about six or eight hours, and then, the tail dropping off by degrees, the animal appears in its most perfect form.

Thus the Frog, in less than a day, having changed its figure, is seen to change its appetites also. So extraordinary is this transformation, that the food it fed upon so greedily but a few days before, is now utterly rejected; it would even starve if supplied with no other. As soon as the animal acquires its perfect state, from having fed upon vegetables, it becomes carnivorous, and lives entirely upon worms and insects. But as the water cannot supply these,

it is obliged to quit its native element, and seek for food upon land, where it lives by hunting worms, and taking insects by surprise. At first, being feeble and unable to bear the warmth of the sun, it hides among bushes and under stones; but when a shower comes to refresh the earth, then the whole multitude are seen to quit their retreats, in order to enjoy the grateful humidity. Upon many occasions the ground is seen perfectly blackened with their numbers: some hunting for prey, and some seeking secure lurking places. From the myriads that offer on such occasions, some have been induced to think that these animals were generated in the clouds, and thus showered down on the earth. But had they like Derham, traced them to the next pool, they would have found out a better solution for the difficulty.

The Frog lives, for the most part, out of the water; but when the cold nights begin to set it, it returns to its native element, always choosing stagnant waters, where it can lie without danger concealed at the bottom. In this manner it continues torpid, or with but very little motion, all the winter: like the rest of the dormant race, it requires no food; and the circulation is slowly carried on without any assistance from the air.

It is at the approach of spring that all these animals are roused from a state of slumber to a state of enjoyment. A short time after they rise from the bottom they begin to pair, while those that are as yet too young, come upon land before the rest. For this reason, while the old ones continue concealed in the beginning of spring, the small ones are more frequently seen; the former remaining in the lake to propagate, while the latter are not yet arrived at a state of maturity.

The difference of sexes, which was mentioned above, is not perceivable in these animals, until they have arrived at their fourth year; nor do they begin to propagate, till they have completed that period. By comparing their

slow growth with their other habitudes, it would appear that they live about twelve years; but having so many enemies, both by land and water, it is probable that few of them arrive at the end of their term.

Frogs live upon insects of all kinds; but they never eat any unless they have motion. They continue fixed and immoveable till their prey appears; and just when it comes sufficiently near, they jump forward with great agility, dart out their tongues, and seize it with certainty. The tongue, in this animal, as in the toad, lizard, and serpent kinds, is extremely long, and formed in such a manner, that it swallows the point down its throat; so that a length of tongue is thus drawn out, like a sword from its scabbard, to assail its prey. This tongue is furnished with a glutinous substance; and whatever insect it touches, infallibly adheres, and is thus held fast till it is drawn into the mouth.

As the Frog is thus supplied with the power of catching its prey, it is also very vivacious, and able to bear hunger for a very long time. I have known one of them continue a month in summer without any other food than the turf on which it was placed in a glass vessel. We are told of a German surgeon, that kept one eight years in a glass vessel, covered with a net. Its food was at all times but sparing; in summer he gave it fresh grass, which it is said to have fed upon; and, in the winter, hay, a little moistened: he likewise, now and then, put flies into the glass which it would follow with an open mouth, and was very expert in catching them. In winter, when the flies were difficult to be found, it usually fell away, and grew very lean; but in the summer, when they were plenty, it soon grew fat again. It was kept in a warm room, and was always lively and ready to take its prey: however, in the eighth winter, when there were no flies to be found, it fell away and died. It is not certain how long it might have lived, had it been supplied with proper nourishment; but

we are certain, that a very little food is capable of sufficing its necessities.

Nor is the Frog less tenacious of life. It will live and jump about several hours after its head has been cut off. It will continue active, though all its bowels are taken out; and it can live some days though entirely stripped of its skin. This cruel trick, which is chiefly practised among school-boys, of skinning Frogs, an operation which is done in an instant, seems for some hours no way to abate their vigor. I am assured that some of them get a new skin, and recover, after this painful experiment.

The croaking of Frogs is well known; and, from thence, in some countries, they are distinguished by the ludicrous title of the Dutch Nightingales. Indeed, the aquatic Frogs of Holland are loud beyond what one would imagine. We could hardly conceive that an animal, not bigger than one's fist, should be able to send forth a note that is heard at three miles' distance; yet such is actually the case. The large water Frogs have a note as loud as the bellowing of a bull; and, for this purpose, puff up the cheeks to a surprising magnitude. Of all Frogs, however, the male only croaks; the female is silent, and the voice in the other seems to be the call to courtship. It is certain, that at these times when they couple, the loudness of their croaking is in some places very troublesome; for then the whole lake seems vocal; and a thousand dissonant notes perfectly stun the neighborhood. At other times, also, before wet weather, their voices are in full exertion; they are then heard with unceasing assiduity, sending forth their call, and welcoming the approaches of their favorite moisture. No weather-glass was ever so true as a Frog in foretelling an approaching change; and, in fact, the German surgeon mentioned above, kept his Frog for that purpose. It was always heard to croak at the approach of wet weather; but was as mute as a fish when it threatened a continuance of fair. This may probably serve to ex-

plain an opinion which some entertain, that there is a month in the year, called *Paddock Moon*, in which the Frogs never croak: the whole seems to be no more than that, in the hot season, when the moisture is dried away, and consequently, when these animals neither enjoy the quantity of health or food that at other times they are supplied with, they show, by their silence, how much they are displeased with the weather. All very dry weather is hurtful to their health, and prevents them from getting their prey. They subsist chiefly upon worms and snails; and as drought prevents these from appearing, the Frog is thus stinted in its provisions, and also wants that grateful humidity which moistens its skin, and renders it alert and active.

As Frogs adhere closely to the backs of their own species, so it has been found, by repeated experience, they will also adhere to the backs of fishes. Few that have ponds, but know that these animals will stick to the backs of carp, and fix their fingers in the corner of each eye. In this manner they are often caught together; the carp blinded and wasted away. Whether this proceeds from the desires of the Frog, disappointed of its proper mate, or whether it be a natural enmity between Frogs and fishes, I will not take upon me to say. A story told us by Walton, might be apt to incline us to the latter opinion.

"As Dubravius, a bishop of Bohemia, was walking with a friend by a large pond in that country, they saw a Frog, when a pike lay very sleepily and quiet by the shore side, leap upon his head, and the Frog having expressed malice or anger by his swollen cheeks and staring eyes, did stretch out his legs, and embraced the pike's head, and presently reached them to his eyes, tearing with them and his teeth those tender parts; the pike, irritated with anguish, moves up and down the water, and rubs himself against weeds, and whatever he thought might quit him of his enemy; but all in vain, for the Frog did continue to

ride triumphantly, and to bite and torment the pike till his strength failed, and then the Frog sunk with the pike to the bottom of the water: then presently the Frog appeared again at the top, and croaked, and seemed to rejoice like a conqueror; after which he presently retired to his secret hole. The bishop, that had beheld the battle, called his fisherman to fetch his nets, and by all means to get the pike, that they might declare what had happened. The pike was drawn forth, and both his eyes eaten out; at which when they began to wonder, the fisherman wished them to forbear, and assured them he was certain that pikes were often so served."

THE TOAD.

If we regard the figure of the Toad, there seems nothing in it that should disgust more than the frog. Its form and proportions are nearly the same; and it chiefly differs in color, which is blacker; and its slow and heavy motion, which exhibits nothing of the agility of the frog: yet such is the force of habit, begun in early prejudice, that those who consider the one as a harmless playful animal, turn from the other with horror and disgust. The frog is considered as a useful assistant, in ridding our grounds of vermin; the Toad, as a secret enemy, that only wants an opportunity to infect us with its venom.

As the Toad bears a general resemblance of figure to the frog, so also it resembles that animal in its nature and appetites. Like the frog, the Toad is amphibious; like that animal, it lives upon worms and insects, which it seizes by darting out its length of tongue; and in the same manner also it crawls about in moist weather. The male and female couple as in all the frog kind; their time of propagation being very early in the spring.

When, like the frog, they have undergone all the variations of their tadpole state, they forsake the water; and

are often seen, in a moist summer's evening, crawling up, by myriads, from fenny places, into dryer situations. There, having found out a retreat, or having dug themselves one with their mouth and hands, they lead a patient solitary life, seldom venturing out, except when the moisture of a summer's evening invites them abroad. At that time the grass is filled with snails, and the pathways covered with worms, which make their principal food. Insects also of every kind they are fond of; and we have the authority of Linnæus for it, that they sometimes continue immoveable, with the mouth open, at the bottom of shrubs, where the butterflies, in some measure fascinated, are seen to fly down their throats.

In a letter from Mr. Arscott, there are some curious particulars relating to this animal, which throws great light upon its history. "Concerning the toad," says he, "that lived so many years with us, and was so great a favorite, the greatest curiosity was its becoming so remarkably tame; it had frequented some steps before our hall-door some years before my acquaintance commenced with it, and had been admired by my father for its size, (being the largest I ever met with,) who constantly paid it a visit every evening. I knew it myself above thirty years; and by constantly feeding it, brought it to be so tame, that it always came to the candle, and looked up, as if expecting to be taken up and brought upon the table, where I always fed it with insects of all sorts. It was fondest of fresh maggots, which I kept in bran; it would follow them, and when within a proper distance, would fix his eyes, and remain motionless for near a quarter of a minute, as if preparing for the stroke, which was an instantaneous throwing its tongue at a great distance upon the insect, which stuck to the tip by a glutinous matter. The motion is quicker than the eye can follow. I cannot say how long my father had been acquainted with the Toad, before I knew it; but when I was first acquainted with it, he used

to mention it as the old Toad I have known so many years; I can answer for thirty-six years. This old Toad made its appearance as soon as the warm weather came; and I always concluded it retired to some dry bank, to repose till spring. When we new layed the steps, I had two holes made in the third step, on each, with a hollow of more than a yard long for it; in which I imagine it slept, as it came from thence at its first appearance. It was seldom provoked. Neither that Toad, nor the multitudes I have seen tormented with great cruelty, ever showed the least desire of revenge, by spitting or emitting any juice from their pimples. Sometimes, upon taking it up, it would let out a great quantity of clear water, which, as I have often seen it do the same upon the steps when quite quiet, was certainly its urine, and no more than a natural evacuation. Spiders, millipeds, and flesh maggots, seem to be this animal's favorite food. I imagine if a bee was to be put before a Toad, it would certainly eat it to its cost; but as bees are seldom stirring at the same time that Toads are, they rarely come in their way; as they do not appear after sun-rising, or before sunset. In the heat of the day they will come to the mouth of their hole, I believe, for air. I once, from my parlor window, observed a large Toad I had in the bank of a bowling-green, about twelve at noon, in a very hot day, very busy and active upon the grass. So uncommon an appearance made me go out to see what it was; when I found an innumerable swarm of winged ants had dropped around his hole; which temptation was as irresistible as a turtle would be to a luxurious alderman. In respect to its end, had it not been for a tame raven, I make no doubt but it would have been now living. This bird, one day seeing it at the mouth of its hole, pulled it out, and, although I rescued it, pulled out one eye, and hurt it so, that notwithstanding its living a twelvemonth, it never enjoyed itself, and had a difficulty of taking its food, missing the mark for want of

its eye. Before that accident, it had all the appearance of perfect health."

To this account of the Toad's inoffensive qualities, I will add another from Valisnieri, to show that, even taken internally, the Toad is no way dangerous. "In the year 1692, some German soldiers, who had taken possession of the Castle of Arceti, finding that the peasants of the country often amused themselves in catching frogs, and dressing them for the table; resolved to provide themselves with a like entertainment, and made preparations for frog fishing, in the same manner. It may easily be supposed that the Italians and their German guests were not very fond of each other; and indeed it is natural to think that the soldiers gave the poor people of the country many good reasons for discontent. They were not a little pleased therefore, when they saw them go to a ditch where Toads instead of frogs were found in abundance. The Germans, no way distinguishing in their sport, caught them in great numbers; while the peasants kept looking on, silently flattering themselves with the hopes of speedy revenge. After being brought home, the toads were dressed up after the Italian fashion: the peasants were quite happy at seeing their tyrants devour them with so good an appetite, and expected every moment to see them drop down dead. But what was their surprise to find, that the Germans continued as well as ever, and only complained of a slight excoriation of the lips, which probably arose from some other cause than that of their repast."

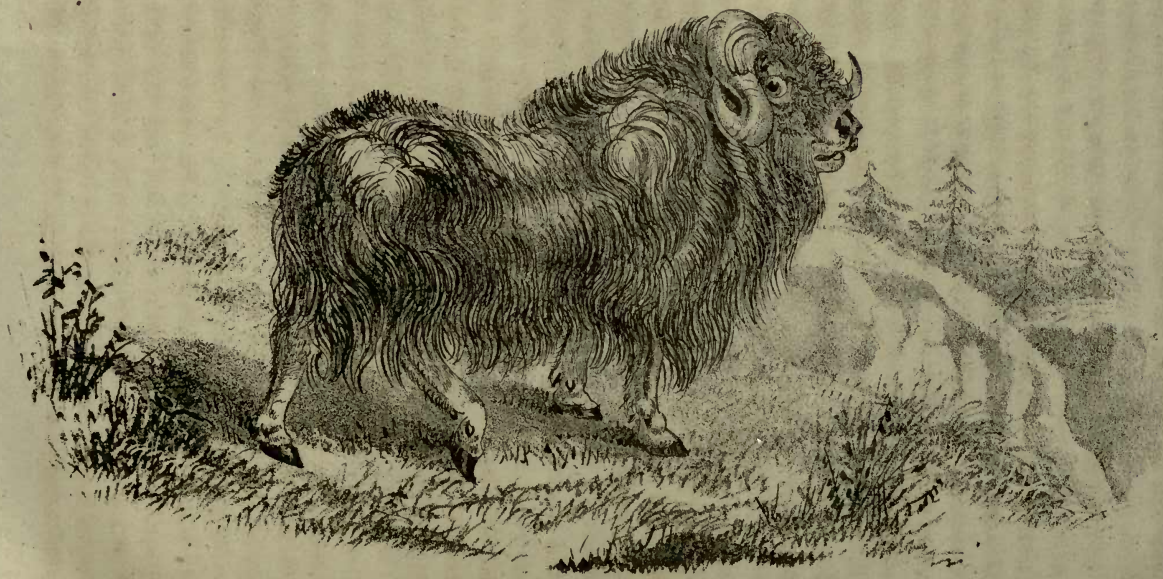
I will add another story, from Solenander; who tells us that a tradesman of Rome and his wife had long lived together with mutual discontent; the man was dropsical, and the woman amorous: this ill-matched society promised soon, by the very infirm state of the man, to have an end; but the woman was unwilling to wait the progress of the disorder; and therefore concluded that, to get rid of her husband, nothing was left her but poison. For this pur-

pose, she chose out a dose that she supposed would be the most effectual; and having calcined some Toads, mixed their powder with his drink. The man, after taking a hearty dose, found no considerable inconvenience, except that it greatly promoted urine. His wife, who considered this as a beginning symptom of the venom, resolved not to stint the next dose, but gave it in greater quantities than before. This also increased the former symptom; and, in a few days, the woman had the mortification to see her detested husband restored to perfect health; and remained in utter despair of ever being a widow.

From all this it will appear with what injustice this animal has hitherto been treated. It has undergone every kind of reproach: and mankind have been taught to consider as an enemy, a creature that destroys that insect tribe which are their real invaders. We are to treat, therefore, as fables, those accounts that represent the Toad as possessed of poison to kill at a distance; of its ejecting its venom, which burns wherever it touches; of its infecting those vegetables near which it resides; of its excessive fondness for sage, which it renders poisonous by its approach; these, and a hundred others of the same kind, probably took rise from an antipathy which some have to all animals of the kind. It is a harmless, defenceless creature, torpid and unvenomous, and seeking the darkest retreats, not from the malignity of its nature, but the multitudes of its enemies.

Like all the frog kind, the Toad is torpid in winter. It chooses then for a retreat either the hollow root of a tree, the cleft of a rock, or sometimes the bottom of a pond where it is found in a state of seeming insensibility. As it is very long lived, it is very difficult to be killed; its skin is tough, and cannot be easily pierced; and, though covered with wounds, the animal continues to show signs of life, and every part appears in motion. But what shall we say to its living for centuries lodged in the bosom of a

rock, or cased within the body of an oak tree, without the smallest access on any side either for nourishment or air, and yet taken out alive and perfect! Stories of this kind it would be as rash to contradict, as difficult to believe; we have the highest authorities bearing witness to their truth, and yet the whole analogy of nature seems to arraign them of falsehood. Bacon asserts, that Toads are found in this manner; Dr. Plot asserts the same: there is to this day a marble chimney-piece at Chatsworth with the print of a Toad upon it, and a tradition of the manner in which it was found. In the Memoirs of the Academy of Sciences, there is an account of a Toad found alive and healthy in the heart of a very thick elm, without the smallest entrance or egress. In the year 1731, there was another found near Nantes in the heart of an old oak, without the smallest issue to its cell; and the discoverer was of opinion, from the size of the tree, that the animal could not have been confined there less than eighty or a hundred years, without sustenance and without air. To all these we can only oppose the strangeness of the facts; the necessity this animal appears under of receiving air; and its dying like all other animals in the air-pump, when deprived of this all-sustaining fluid. But whether these be objections to weigh against such respectable and disinterested authority, I will not pretend to determine; certain it is, that if kept in a damp place, the Toad will live for several months without any food whatsoever.



MUSK.

THE MUSK.

PLATE XLI.—THE MUSK.

The more we search into Nature, the more we shall find how little she is known; and we shall more than once have occasion to find, that protracted inquiry is more apt to teach us modesty, than to produce information. Although the number and nature of quadrupeds, at first glance, seems very little known; yet, when we come to examine closer, we find some with which we are very partially acquainted, and others that are utterly unknown. There is scarce a cabinet of the curious but what has the spoils of animals, or the horns or the hoofs of quadrupeds, which do not come within former descriptions. There is scarce a person, whose trade is to dress or improve furs, but knows several creatures by their skins, which no naturalist has hitherto had notice of. But of all quadrupeds, there is none so justly the reproach of natural historians, as that which bears the musk. This perfume, so well known to the elegant, and so very useful in the hands of the physician; a medicine that has for more than a century been imported from the East in great quantities, and during all that time has been improving in its reputation, is, nevertheless, so very little understood, that it remains a doubt whether the animal that produces it be a hog, an ox, a goat, or a deer. When an animal with which we are so nearly connected, is so utterly unknown, how little must we know of many that are more remote and unserviceable! Yet naturalists proceed in the same train, enlarging their catalogues and their names, without endeavoring to find out the nature, and fix the precise history of those with which we are very partially acquainted. It is the spirit of the scholars of the present age to be fonder of increasing the bulk of

our knowledge, than its utility; of extending their conquests, than of improving their empire.

The musk which comes to Europe, is brought over in small bags, about the size of a pigeon's egg, which, when cut open, appear to contain a kind of dusky, reddish substance, like coagulated blood, and which, in large quantities, has a very strong smell; but, when mixed and diffused, becomes a very agreeable perfume. Indeed, no substance now known in the world has a stronger or a more permanent smell. A grain of musk perfumes a whole room; and its odor continues for some days without diminution. But in a larger quantity it continues for years together; and seems scarce wasted in its weight, although it has filled the atmosphere to a great distance with its parts. It is particularly used in medicine, in nervous and hysteric disorders; and is found in such cases to be the most powerful remedy now in use: however, the animal that furnishes this admirable medicine, has been variously described, and is known but very imperfectly.

The description given of this animal by Grew, is as follows:—"The musk animal is properly neither of the goat nor deer kind, for it has no horns, and it is uncertain whether it ruminates or not; however, it wants the fore-teeth in the upper jaw, in the same manner as in ruminating animals; but, at the same time, it has tusks like those of a hog. It is three feet six inches in length, from the head to the tail; and the head is above half a foot long. The fore-part of the head is like that of a grayhound; and the ears are three inches long, and erect, like those of a rabbit; but the tail is not above two inches. It is cloven-footed, like beasts of the goat kind; the hair on the head and legs is half an inch long, on the belly an inch and a half, and on the back and buttocks three inches, and proportionably thicker than in any other animal. It is brown and white alternately, from the root to the point; on the head and thighs it is brown, but under the belly and tail white, and a

little curled, especially on the back and belly. On each side of the lower jaw, under the corners of the mouth, there is a tuft of thick hair, which is short and hard, and about three quarters of an inch long. The hair, in general, of this animal, is remarkable for its softness and fine texture; but what distinguishes it particularly are the tusks, which are an inch and a half long, and turn back in the form of a hook; and more particularly the bag which contains the musk, which is three inches long, two broad, and stands out from the belly an inch and a half. It is a very fearful animal, and, therefore, it has long ears; and the sense of hearing is so quick, that it can discover an enemy at a great distance."

After so long and circumstantial a description of this animal, its nature is but very little known; nor has any anatomist as yet examined its internal structure; or been able to inform us whether it be a ruminant animal, or one of the hog kind; how the musk is formed, or whether those bags in which it comes to us be really belonging to the animal, or are only the sophistications of the venders. Indeed, when we consider the immense quantities of this substance which are consumed in Europe alone, not to mention the East, where it is in still greater repute than here, we can hardly suppose that any one animal can furnish the supply; and particularly when it must be killed before the bag can be obtained. We are told, it is true, that the musk is often deposited by the animal upon trees and stones, against which it rubs itself when the quantity becomes uneasy; but it is not in that form which we receive it, but always in what seems to be its own natural bladder. Of these, Taverner brought home near two thousand in one year; and, as the animal is wild, so many must, during that space, have been hunted and taken. But as the creature is represented very shy, and as it is found but in some particular provinces of the East, the wonder is, how its bag should be so cheap, and furnished in such

great plenty. The bag in common does not cost (if I do not forget) above a crown by rètail, and yet this is supposed the only one belonging to the animal; and for the obtaining of which, it must have been hunted and killed. The only way of solving this difficulty, is to suppose that these bags are, in a great measure, counterfeit, taken from some other animal, or from some part of the same, filled with its blood, and a very little of the perfume, but enough to impregnate the rest with a strong and permanent odor. The Musk inhabits different parts of the Eastern Continent, and the barren land of America lying to the northward of the sixtieth degree of latitude, and ranges to Melville Island, over the islands which lie to the north of the American Continent. Musk comes to us from China, Tonquin, Bengal, and often from Muscovy: that of Thibet is reckoned the best, and sells for fourteen shillings an ounce; that of Muscovy the worst, and sells but for three; the odor of this, though very strong at first, being quickly found to evaporate. Musk was some years ago in the highest request as a perfume, and but little regarded as a medicine; but at present, its reputation is totally changed; and having been found of great benefit in physic, it is but little regarded for the purposes of elegance. It is thus that things which become necessary, cease to continue pleasing; and the consciousness of their use, destroys their power of administering delight.

Pl. 42.

SKUNK.

THE SKUNK.

PLATE XLII.—THE SKUNK.

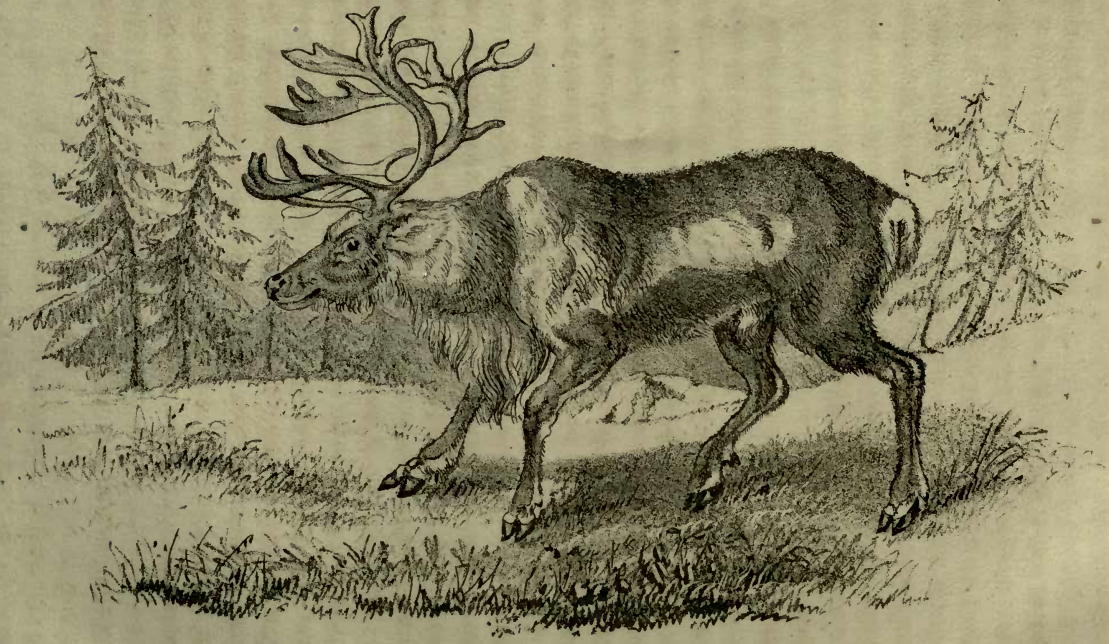
This animal is called by different names by different naturalists, Stinkard, Skink, and Skunk. It inhabits the whole of North America, and is also found throughout a part of the southern portion of that continent. A considerable number of animals of this genus are natives of America, resembling each other strongly in form and size, but differing in the number and variety of their stripes and markings, have been described by authors as so many distinct species. Baron Cuvier thinks that the present state of our knowledge of these animals does not warrant us in considering them otherwise than as varieties of a single species, and of these varieties he enumerates fifteen.

This animal is of a brown color, marked sometimes with two white stripes. The faculty this animal possesses, of annoying its enemies by the discharge of a noisome fluid, causes it to be rather shunned than hunted, which the value of its skin would otherwise be sure to occasion. The smallest drop of this fluid is sufficient to render a garment detestable for a great length of time. Washing, smoking, baking, or burying articles of dress, seem to be equally inefficient for its removal.

The habitudes of this animal are the same as all the rest of the weasel kind, as they prey upon smaller animals and birds' eggs. The squash, for instance, burrows like the polecat in the clefts of rocks, where it brings forth its young. It often steals into farm-yards, and kills the poultry, eating only their brains. Nor is it safe to pursue or offend it, for then it calls up all its scents, which are its most powerful protection. At that time neither men nor dogs will offer to approach it; the scent is so strong that it

reaches for half a mile round, and more near at hand is almost stifling. If the dogs continue to pursue, it does all in its power to escape, by getting up a tree, or by some such means; but if driven to an extremity, it then lets fly upon the hunters; and if it should happen that a drop of this fœtid discharge falls in the eye, the person runs the risk of being blinded for ever.

The dogs themselves instantly abate of their ardor when they find this extraordinary battery played off against them; they instantly turn tail, and leave the animal undisputed master of the field; and no exhortations can ever bring them to rally. "In the year 1749," says Kalm, "one of these animals came near the farm where I lived. It was in winter time, during the night; and the dogs that were upon the watch, pursued it for some time, until it discharged against them. Although I was in my bed a good way off, I thought I should have been suffocated; and the cows and oxen, by their lowings, showed how much they were affected by the stench. About the end of the same year, another of these animals crept into our cellar, but did not exhale the smallest scent, because it was not disturbed. A foolish woman, however, who perceived it at night, by the shining of its eyes, killed it, and at that moment its stench began to spread. The whole cellar was filled with it to such a degree, that the woman kept her bed for several days after; and all the bread, meat, and other provisions, that were kept there, were so infected, that they were obliged to be thrown out of doors." Nevertheless, many of the planters and native Americans keep this animal tame about their houses: and seldom perceive any disagreeable scents, except it is injured or frighted. They are also known to eat its flesh, which some assert to be tolerable food; however, they take care to deprive it of those glands which are so horridly offensive.



THE REIN DEER.

THE REIN-DEER.

THE REIN-DEER.—PLATE XLIII.

As with the moose or elk, we shall consider the history of the Rein-deer separately, as an inhabitant of the old and new world. In both he fills a very important part in the economy of the native tribes; but it is marked with this peculiarity, that in the one he is hunted in a state of nature, while in the other the greater proportion of the race is under the guidance and protection of man, and is considered as part of the riches and private property of the individuals. Also as with the animal above alluded to, they present varieties in the different countries, which have not yet been defined, and which may ultimately lead to a distinction of the species which inhabits the two continents. We shall first notice the Rein-deer in America.

The works of Hearne, Hutchins, Pennant, Say, and more lately of Dr. Richardson, have given many details regarding this animal. It inhabits a great range of country, nearly as far south as Canada, and extending north farther than any other deer. Two varieties at least exist, named by Dr. Richardson, the Barren-ground Caribou, and the Woodland Caribou. The latter is the smallest in size, is less esteemed, and in every way reckoned inferior to the other. It inhabits a limited tract of country, a stripe of low primitive rocks, well clothed with woods, about one hundred miles wide, and extending at the distance of eighty or a hundred miles from the shores of Hudson's Bay, from Athapascow Lake to Lake Superior; and it is curious, that the woodland caribou migrates or travels to the southward in the spring—a direction opposite to that of those inhabiting the barren grounds. This animal requires investigation. A naturalist has not yet had an opportunity; and it is much more than probable, that it may turn

out to be distinct from either the other inhabitants of America or those of Europe. Horns of another allied deer are described by Major Smith, under the title of C. coronatus. The horns of this variety are known to differ from the others.

The barren-ground caribou of Dr. Richardson is distributed over the fur countries, and passes the summer on the shores of the Arctic Sea. This is an animal of a small size, weighing, when in good condition, and without the offal, from ninety to one hundred and thirty pounds. During summer they migrate to the coast, and feed on the young shoots of the grasses which commence to spring up in the sheltered arctic valleys. In a wild state, this animal is no less necessary for the support of the native tribes, than it is to the Laplanders in Europe. "The Chepewyans, the Copper Indians, the Dogribs, and Hare Indians of Great Bear Lake," Dr. Richardson remarks, "would be totally unable to inhabit these frozen grounds, were it not for the immense herds of deer that exist there. Of the caribou horns they form their fish-spears and hooks; and, previous to the introduction of European iron, ice-chisels and various other utensils were also made of them. The hide, dressed with the fur, is excellent for winter clothing, and supplies the place of both blanket and feather-bed to the inhabitant of the arctic wilds. It also forms a soft and pliable leather, adapted for moccasins and summer clothing; or, when sixty or seventy skins are sewed together, they make a tent sufficient for the residence of a large family. The shin-bone of the deer, split so as to present a sharp edge, is the knife that is used to remove the hair in the process of making the leather. The undressed hide, after the hair is taken off, is cut into thongs of various thickness, which are twisted into deer-snares, bow-strings, net-lines, and in fact supply all the purposes of rope. The finer thongs are used in the manufacture of fishing-nets, or in making snow-shoes; while the tendons of the dor-

sal muscles are split into fine and excellent sewing thread."

To the Canadian voyager the venison is an important article. By the natives the whole animal almost is consumed, every part of the interior being eaten; but it is from a mixture of the meat and fat of this animal, that the composition named pemmican is made. If kept dry, it may be preserved for three or four years, and, containing much nourishment in small bulk, is well fitted for extensive journeys, as has already been proved by its utility in the arduous arctic expeditions of our countrymen. Another mixture of pounded deer's meat and fish, or fish-roe, is made, which is either eaten raw, or made into soup; it is called Thucchawgan.

Excellent and appropriate winter dresses are also made of the skins, by both natives and Europeans, which exclude the cold in a way hardly to be credited. This, however, will be better exemplified when we notice the Reindeer of Lapland.

To the European the gun is an indispensable accompaniment of the chase; but for the native tribes, necessity has been fertile in expedients to kill or capture them. They are said to be the most easy of approach of all the North American deer; and a single family of Indians will sometimes destroy two or three hundred in a few weeks. They are taken by snares, or shot with the bow and arrow, being approached by stealth, or driven into the passes, where an ambuscade lies in wait for them; or, as they freely take to the waters of rivers and lakes, they are easily overtaken in the canoes, and speared. The Esquimaux also shoot them with arrows, and exhibit great patience in waylaying their prey. They are so inquisitive as to examine any object with which they are unaccustomed; and to this the hunter trusts; or, creeping behind any object of partial concealment, he imitates the bellow of the animal, having his deer-skin coat and hood down over his head.

In both cases he is generally successful, and rarely shoots before the animal reaches a distance of twelve paces. The most ingenious method of taking them is, however, noticed by Dr. Richardson, as practised by the inhabitants to the southward of Chesterfield's Inlet. It is by a trap made of snow and ice. "The sides of the trap are built of slabs of snow, cut as if for a snow-house. An inclined plane of snow leads to the entrance of the pit, which is about five feet deep, and of sufficient dimensions to contain two or three large deers. The pit is covered with a large thin slab of snow, which the animal is enticed to tread upon, by a quantity of the lichens on which it feeds being placed conspicuously on an eminence beyond the opening. The exterior of the trap is banked up with snow, so as to resemble a natural hillock, and care is taken to render it so steep on all sides but one, that the deer must pass over the mouth of the trap before it can reach the bait. The slab is sufficiently strong to bear the weight of a deer, until it has passed the middle, when it revolves on two short axles of wood, precipitates the deer into the trap, and returns to its place again, in consequence of the lower end being heavier than the other."

Hearne describes another method still, by which these important animals are brought within reach of the more imperfect weapons of the Indians,—that of driving into a pound, as is also done with the wild buffalo; the principle is the same. A fence, or the appearance of it, is placed in the form of an angle, the entrance being wide, into which, when the herds enter, they are impelled forward by noise behind, until they are gradually enclosed in the centre fold. In the present instance, the centre pound or fold is sometimes a mile in circumference, and is intersected with brush and fences, in which snares made of thongs of Rein-deer skins, are fixed, and in which, when entangled, they are easily speared.

In Europe, the Rein-deer inhabits the more northern

countries, Siberia, Lapland, Finmark, and Sweden; but is not, we believe, known to the south of the Baltic Sea. It also extends beyond the Asiatic boundary, and among some tribes is used as a beast of burden. In Iceland it has been for some time introduced. In none of these countries is it so much esteemed as in Lapland. It there becomes the sole wealth of the people, being every necessary they require; its care, food, and dressing occupying by far the greatest and most valuable portion of their time. The movements of the Laplander, and his habits of life, may indeed in reality be said, to be under the control of his deer. He must follow them during summer in search of adequate pastures, and attend to their migrations to the coast; while in winter many a dreary hour is spent in the snowdrift in looking after the safety of his herd.

Independent of the indispensable utility for food and clothing, the Rein-deer is also used to transport merchandise, as a courier, where dispatch is needed, and for general travelling. Sometimes they are even used to plough and harrow, and in winter are employed to draw hay and fodder laden upon trays. Travelling in winter is performed entirely by their assistance, in a sledge, or, as it is termed, a pulk; but before adverting to this conveyance, novel to the European visiter, we shall notice the speed with which the animal can travel.

According to the best authorities, one hundred and fifty miles was performed with one deer in twenty-four hours, and once by two merchants across the mountains in nineteen hours, while the same distance has been performed with three deer in thirteen hours. But the greatest recorded instance of the speed of this animal, is that of the deer, of which a portrait, together with that of its driver, is preserved in the palace of Drottingholm. In consequence of the Norwegians making a sudden irruption into the Swedish territories, an officer was despatched, with a sledge and single deer, to convey the intelligence to

Stockholm. The distance, one hundred and twenty-four Swedish miles, or eight hundred English miles, was performed in forty-eight hours; but the deer dropped down lifeless on its arrival. This relation of speed is always spoken of as a certainly authenticated fact; but we cannot help suspecting that there is some error in the time; both the time and distance appear incredible; and, at all events, it will prove the exception to the general rate of speed. Sir Arthur de Capel Brooke observed, that a deer can easily trot ten miles, and perhaps gallop nearly double the space in an hour, if put to extreme speed; but he would be unable to keep it up longer. That traveller has also given the details of a race, instituted for the purpose of ascertaining the comparative speed; and, as the details are short and simple, we shall insert them:—Four deer were used; the first accomplished five thousand three hundred and ninety-seven Paris feet in six minutes; the second performed the same distance in seven minutes thirty seconds; the others were distanced. This race was performed while the snow was deep, and consequently a considerable impediment to the running. Another experiment was afterwards tried on more favorable ground. The first deer performed three thousand eighty-nine feet eight inches, in two minutes, being at the rate of nearly nineteen miles in an hour, and thus accomplishing twenty-five feet eight inches in every second.

To give some idea of travelling in Lapland with these useful creatures, we have abridged an account of a journey performed by Sir Arthur de Capel Brooke in that country, and can recommend the perusal of his "Winter in Lapland," as a work of much interest, and containing one of the best histories of the domestic condition of the Rein-deer.

The party of which Sir Arthur formed a part, were about to travel from Alten to Stockholm in sledges. They leave Alten; but, at a distance of some miles, find them

selves stopped by one of the streams being still unfrozen. Some of the party, among whom was our traveller, return to Alten to pass the night, while others take up their quarters in the cottage of a Finlander, where the rendezvous was to take place again early next morning. About nine o'clock the journey was to be again commenced. "The morning was cold and stormy; I was jaded, miserably tired for want of rest, and just on the point of being tied to the tail of a wild deer, and dragged at random in the dark, in a kind of cock-boat, some hundred miles across the trackless snows of Lapland. Our pulks were ranged together in close order; and the wappus or guide having performed the last office for us, by tying each of us in as fast as possible, and giving us the rein, jumped into his own, and then slightly touching the deer with his thong, the whole of them started off like lightning.

"The want of light rendered it difficult to distinguish the direction which we were going in, and I therefore left it entirely to my deer to follow the rest of the herd, which he did with the greatest rapidity, whirling the pulk behind him. I soon found how totally impossible it was to preserve the balance necessary to prevent its overturning, owing to the rate we were going at, and roughness of the surface in parts where the snow had drifted away, the pulk frequently making a sudden bound of some hundred yards, when the deer was proceeding down a smooth slippery declivity. In the space of the first two hundred yards I was prostrate in the snow several times, the pulk righting again by my suddenly throwing my weight on the opposite side. My attention was too deeply engrossed by my own situation, to observe particularly that of my fellow travellers, or to be able to assist them. The deer appeared at first setting off, to be running away in all directions, and with their drivers alternately sprawling in the snow. As I passed Mr. Heinchen's deer at full speed, I observed, to my great wonder, the former turned completely over in his

pulk, without appearing to sustain any damage, or his deer at all to relax its pace. My turn was now arrived; and as we were descending a trifling declivity, and about to enter the fir forest, a sudden jerk threw the pulk so completely on its broadside, that I was unable to recover it, and I was dragged in this manner for a considerable distance, reclining on my right side, and ploughing up the snow, which formed a cloud around me, from the quick motion of the vehicle. To render my situation more helpless, on losing my balance I had lost also the rein; and though I saw it dancing in the snow within an inch of my hands, I was unable, from the position I lay in, to recover it. Notwithstanding the great increase of the weight, the deer relaxed but little of his speed, making greater exertions the more he felt the impediment. The depth of the snow, however, in parts, exhausted the animal, and he at length stopped for an instant, breathless, and turned round to gaze upon his unfortunate master. I began to fear I was now going to receive some punishment for my awkwardness; but after resting a moment, he again proceeded. In the mean time, I had been enabled to recover the rein, as well as to place myself once more in an upright posture, and we continued our way at increased speed."

This accident, however, threw our traveller behind, and he did not overtake the party until a halt had been called to collect the stragglers, and we find them now upon the banks of the Aiby Elv, a stream which was still open in the centre, and which they were obliged to cross. This was managed as follows:—

"The Laplanders, to whom these obstacles are trifles, prepared without hesitation to leap each deer with its driver and sledge over together. This seemed no less difficult than hazardous; indeed it appeared quite impracticable, from the width of the unfrozen part, which was about seven feet, and in the centre of the stream. The whole breadth of the Aiby Elv here might perhaps be

twenty feet, and on each side there was a short precipitous bank, the space between that on which we were and the open part, being about six or seven feet, the ice of which appeared firm and thick.

"The wappus now getting out of his pulk, stationed himself near the open part; and the sledges then advancing, each deer was urged forward by his driver to the utmost of his speed, descending the declivity at full gallop. Nothing less than such an impetus could have carried us across, from the heavy load of the sledge and driver. The natural force which its own weight gave it, being thus so greatly increased by the speed of the deer, and the icy smoothness of the bank, it made of itself so great a bound on coming to the open space, as in most instances to gain the firm part of the opposite ice, and by the strength of the deer was dragged up the opposite side. The first three or four took their leaps in fine style, carrying their drivers completely and safely over. The one immediately before me failed in the latter respect; for though it cleared the open part, yet the sledge, from its weight or some other cause, not making a sufficient bound, the fore part of it alone reached the firm ice, and the hinder, with its driver, was consequently immersed in the water, till the deer, by main strength, extricated it from its awkward situation. I relied greatly on mine, from its size, and fortunately was not disappointed, as it conveyed me safely across, both deer and sledge clearing the entire space."

At night the party, twenty-three in number, halted in a birch thicket at the base of the Finmark or Lapland Alps. The weather changes to a storm of wind and snow, but after much consultation, it is determined to proceed and attempt the crossing of the Solivara Mountains. The ascent was very tedious, from the steepness and the newly fallen snow, and the weather came on so thick, that the guide thought it advisable not to attempt crossing the summit. In the course of an hour, however, the fog cleared

away, and it was determined again to proceed, after a short halt, to recruit the strength of the jaded deer.

"Our halt scarcely exceeded a quarter of an hour; but, before the expiration of this, our twilight had failed us, and the arch of heaven was studded with twinkling lights. We had no time to lose; for we had yet many a weary stretch of mountain, before we should arrive at any place that would afford us wood for our night's bivouac. The evening star, which shone brightly, cheered our lonely way, as we glided along the frozen top of the Solivara, the highest of the Finmark Alps. The snow on its bleak surface was hard as adamant, and our deer, refreshed by the rest they had made, flew swiftly along. We had at this time accomplished about half the distance to the commencement of the descent on the opposite side of the mountains. Hitherto we had considered ourselves fortunate in the clearness of the weather, but we were now about to experience a striking reverse. Our guides, with the usual caution of these people when crossing the mountains, on looking to the westward discovered a small misty appearance, which slightly obscured that quarter, and seemed to be approaching us. I probably never would have discovered it myself. The Laplanders, however, know too well by experience what these mists portend, and are too fully aware of the danger of meeting with them, not to keep a constant look-out. In an instant we were in confusion, our guide quickly made known the approach of our enemy in the rear, and the immediate necessity there was of pushing forward at the utmost speed to which we could put the deer.

"The guide coming to me, and whispering in my ear with a seeming mystery, gave me a piece of advice of some importance. The fog, said he with earnestness, would shortly overtake us, and when that happened, he briefly counselled me to halloo on my deer as fast as it could gallop—to mind no other person, and never to be in

the rear. My deer, indeed, was one of the best and fleetest of the herd, and I was now so expert in the management of both animal and pulk, that I felt tolerably confident I should not be the hindmost, except some accident occurred. Fastening, therefore, the end of the rein tightly round my arm, to prevent dropping it, I followed the example of my wappus, flanking the sides of the animal to increase its speed. The whole party did the same, and redoubled their swiftness. Two stars in the south-east had hitherto served as steering points; all around us, however, became quickly obscured. The fog overtook us in our career, and in a few minutes the heavenly bodies were no longer visible. Our confusion was now greatly increased; we were suddenly enveloped in a dense mist, and were unable to discern our nearest neighbors. Our speed, notwithstanding, was unrelaxed, and it was a complete helter-skelter race in the dark, every one minding himself. The utility of the deer's bells was here fully shown, since without them half our party would probably have been lost.

"In this manner we scampered along the top of the Solivara, bewildered, and dreading lest the mist should be succeeded by the snow-drift. By the inclination of the ground, our foremost guide perceived we were now coming to the descent of the range, and for the first time was sensible, that the darkness had brought us into a part of the mountains with which he was unacquainted. This unpleasant intelligence made us proceed step by step with the utmost caution, till we found our progress suddenly arrested. The foremost deer had reached the brink of a precipice, and had stopped from instinct. We had fortunately relaxed from our usual pace, or the whole party would have been over. We now turned in a different direction, to endeavor to find a part where the descent was more gradual. This was not easy, on account of the dark-

ness, and every step was pregnant with danger. In a few minutes I heard a confused noise among the foremost sledges, and had little time for preparation, when I found myself suddenly descending a precipitous part of the mountain. The surface was as smooth as glass, and both deer and sledge glided down like lightning. It was in vain to attempt to stop the latter. The velocity it acquired in a few yards, from the weight alone, was so great, that it quickly overtook the animal that drew it. His legs being now hampered by the traces between them, the deer in consequence fell, and the pulk swinging round in a different direction, came on its side, and in an instant rolled like a ball. In this manner it continued its descent, and dragged the deer along with it. The surface of snow was fortunately smooth, and I rolled along with the pulk with comparative ease; the lowness of it greatly increasing the facility with which it performed its evolutions, while the quickness with which it took place, made me hardly sensible of it.

"During this time the situation of the other sledges was similar to my own, and the cry of Wappus was now heard from all quarters to obtain assistance. The guide, as soon as he could extricate himself, came to our aid, setting the deer again on their legs. We now collected at the bottom, in a state of alarm naturally created by this sudden and unexpected descent. The damage sustained, however, was trifling, and, singular to relate, no one had suffered the least hurt."

These sketches from Sir Arthur's work will serve to depict travelling in Lapland with Rein-deer. The party arrived in safety at their destination, after many adventures of a similar kind, which our limits will not permit us to insert. No other conveyance at many seasons could traverse that country, and no animal but the Rein-deer could serve the same purposes; and though not affording the

luxury and certainty of time of British travelling, there must be much spiriting incitement after the management of the pulk is obtained.

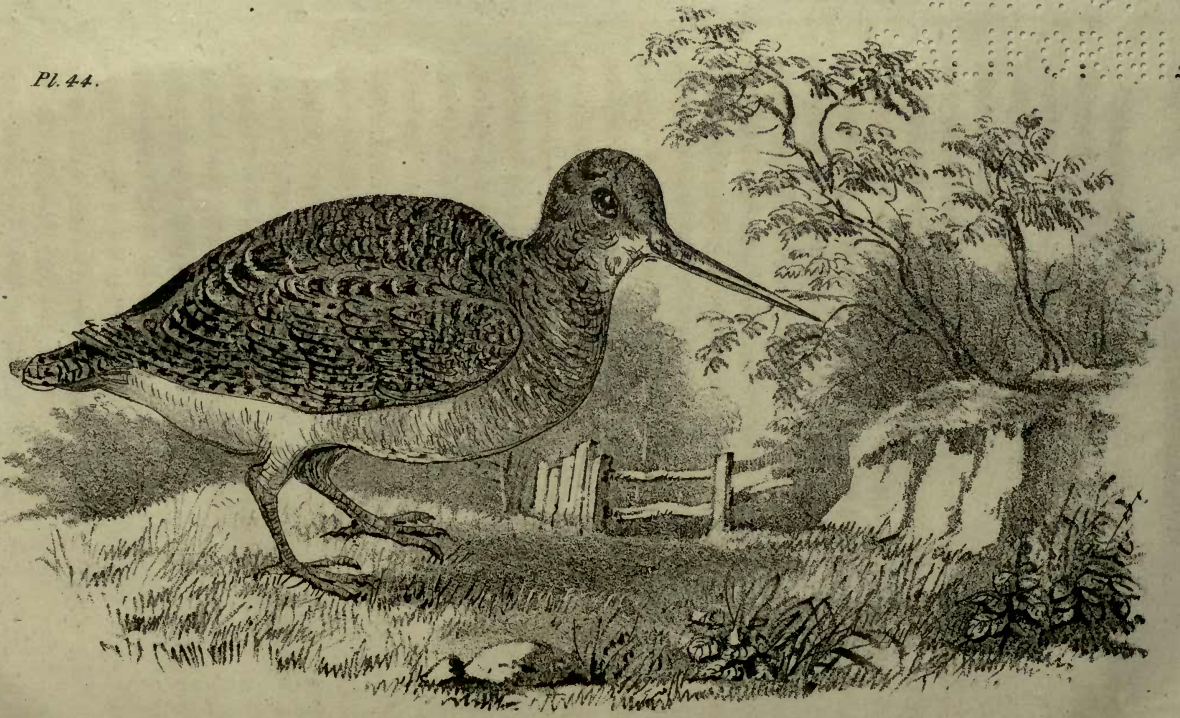
The Rein-deer used for travelling are often kept by persons, and let out for that purpose, their owners generally accompanying any distant expedition, and acting as guides. A Lapland family generally possesses a herd of fifty to five hundred head; those with less than a hundred, however, are only able to enjoy a precarious living, and two or more families generally join their wealth; while with five hundred a man can support his family with curd, cheese, and milk, during summer, and in winter can kill deer. To kill venison is looked upon as independence; one possessing a herd of a thousand deer, is talked of as a rich man, and a few individuals are said to possess the extravagant wealth of from fifteen hundred to two thousand.

The food of the Rein-deer in Europe during summer, is the young shoots of the birch and willow, with a variety of mountain pasture and shrubs. During summer, a migration to the coast appears essential to their health; and when in a state of domestication, this is yearly observed by the family of the Laplander migrating with his herds, for a sojourn of some months to the vicinity of the sea. In winter, the food consists in a great part of various lichens, but principally the rein-deer moss as it is called. In seeking for this, they use their broad hoofs, and sometimes the horns, to remove the snow, and the sense which the animal possesses to search for the plant, and to know the part of the ground where it grows, under a deep covering of snow, is extremely fine. "The natural quickness in this respect," says Broke, "is amazing. When a halt with the sledges was made, they quickly set themselves to uncover the moss, but if the stoppage happened to be on a lake, the attempt was never made, though the snow, as in the other case, was some feet in depth above the ice."

There is a singular propensity in the Rein-deer to feed on the lemmings, which they seize and devour with a sort of unrestrainable passion. During the migrations of these little animals, the herdsman is frequently unable to keep his deer together, they disperse so widely and eagerly in search of them.

Several attempts have been made to introduce the Rein-deer into this country, but yet without success, chiefly, it appears, from the improper selection of a place to which they might retire on their first landing.

Pl. 44.



WOODCOCK.

THE WOODCOCK.

PLATE XLIV.—THE WOODCOCK.

This bird is universally known to our sportsmen. It arrives in Pennsylvania early in March, sometimes sooner; and I doubt not but in mild winters some few remain with us the whole of that season. During the day, they keep to the woods and thickets, and at the approach of evening seek the springs, and open watery places to feed in. They soon disperse themselves over the country to breed. About the beginning of July, particularly in long-continued hot weather, they descend to the marshy shores of our large rivers, their favorite springs and water recesses, inland, being chiefly dried up. To the former of these retreats they are pursued by the merciless sportsman, flushed by dogs, and shot down in great numbers. This species of amusement, when eagerly followed, is still more laborious and fatiguing than that of Snipe-shooting; and from the nature of the ground, or cripple as it is usually called, viz: deep mire, intersected with old logs, which are covered and hid from sight by high reeds, weeds, and alder bushes, the best dogs are soon tired out; and it is customary with sportsmen, who regularly pursue this diversion, to have two sets of dogs, to relieve each other alternately.

The Woodcock usually begins to lay in April. The nest is placed on the ground, in a retired part of the woods, frequently at the root of an old stump. It is formed of a few withered leaves, and stalks of grass, laid with very little art. The female lays four, sometimes five eggs, about an inch and a half long, and an inch or rather more in diameter, tapering suddenly to the small end. These are of a dun clay color, thickly marked with spots of brown, particularly at the great end, and interspersed with others of a very pale purple. The nest of the Woodcock

has, in several instances that have come to my knowledge, been found with eggs in February; but its usual time of beginning to lay, is early in April. In July, August, and September, they are considered in good order for shooting.

The Woodcock is properly a nocturnal bird, feeding chiefly at night, and seldom stirring about till after sunset. At such times, as well as in the early part of the morning, particularly in spring, he rises by a kind of spiral course, to a considerable height in the air, uttering at times a sudden quack, till having gained his utmost height, he hovers around in a wild irregular manner, making a sort of murmuring sound; then descends with rapidity as he rose. When uttering his common note on the ground, he seems to do it with difficulty, throwing his head towards the earth, and frequently jetting up his tail. These notes and manœuvres are most usual in spring, and are the call of the male to his favorite female. Their food consists of the various larvæ, and other aquatic worms, for which, during the evening, they are almost continually turning over the leaves with their bill, or searching in the bogs. Their flesh is reckoned delicious, and prized highly. They remain with us till late in autumn; and on the falling of the first snows, descend from the ranges of the Alleghany, to the lower parts of the country, in great numbers; soon after which, viz., in November, they move off to the south.

This bird, in its general figure and manners, greatly resembles the Woodcock of Europe, but is considerably less, and very differently marked below, being an entirely distinct species. A few traits will clearly point out their differences. The lower parts of the European Woodcock are thickly barred with dusky waved lines, on a yellowish white ground. The present species has those parts of a bright ferruginous. The male of the American species weighs from five to six ounces, the female eight; the Euro-

pean twelve. The European Woodcock makes its first appearance in Britain in October and November, that country being in fact only its winter quarters ; for early in March they move off to the northern parts of the continent to breed. The American species, on the contrary, winters in countries south of the United States, arrives here early in March, extends its migrations as far, at least, as the river St. Lawrence, breeds in all the intermediate places, and retires again to the south on the approach of winter. The one migrates from the torrid to the temperate regions ; the other from the temperate to the arctic. The two birds therefore, notwithstanding their names are the same, differ not only in size and markings, but also in native climate. Hence the absurdity of those who would persuade us, that the Woodcock of America crosses the Atlantic to Europe, and *vice versa*. These observations have been thought necessary, from the respectability of some of our own writers, who seem to have adopted this opinion.

How far to the north our Woodcock is found, I am unable to say. It is not mentioned as a bird of Hudson's Bay ; and being altogether unknown in the northern parts of Europe, it is very probable that its migrations do not extend to a very high latitude; for it may be laid down as a general rule, that those birds which migrate to the arctic regions in either continent, are very often common to both. The head of the Woodcock is of singular confirmation, large, somewhat triangular, and the eye fixed at a remarkable distance from the bill, and high in the head. This construction was necessary to give a greater range of vision, and to secure the eye from injury while the owner is searching in the mire. The flight of the Woodcock is slow. When flushed at any time in the woods, he rises to the height of the bushes or under-wood, and almost instantly drops behind them again at a short distance, generally running off for several yards as soon as he touches the ground. The notion that there are two species of Woodcock in this

country, probably originated from the great difference between the male and female, the latter being considerably the larger.

The male Woodcock is ten inches and a half long, and sixteen inches in extent; bill a brownish flesh color, black towards the tip, the upper mandible ending in a slight nob, that projects about one-tenth of an inch beyond the lower, each grooved, and in length somewhat more than two inches and a half; forehead, line over the eye, and whole lower parts, reddish tawny; sides of the neck inclining to ash; between the eye and bill, a slight streak of dark brown; crown, from the fore-part of the eye backwards, black, crossed by three narrow bands of brownish white; cheeks marked with a bar of black, variegated with light brown; edges of the back and of the scapulars, pale bluish white; back and scapulars, deep black, each feather tipt or marbled with light brown and bright ferruginous, with numerous fine zigzag lines of black crossing the lighter parts; quills plain dusky brown; tail black, each feather marked along the outer edge with small spots of pale brown, and ending in narrow tips of a pale drab color above, and silvery white below; lining of the wing bright rust; legs and feet a pale reddish flesh color; eye very full and black, seated high, and very far back in the head; weight five ounces and a half, sometimes six.

The female is twelve inches long, and eighteen in extent; weighs eight ounces; and differs also in having the bill very near three inches in length; the black on the back is not quite so intense; and the sides under the wings are slightly barred with dusky.

The young Woodcocks, of a week or ten days old, are covered with down of a brownish white color, and are marked from the bill, along the crown to the hind-head, with a broad stripe of deep brown; another line of the same passes through the eyes to the hind-head, curving under the eye; from the back to the rudiments of the tail

runs another of the same tint, and also on the sides under the wings; the throat and breast are considerably tinged with rufous; and the quills, at this age, are just bursting from their light blue sheaths, and appear marbled as in the old birds; the legs and bill are of a pale purplish ash color; the latter about an inch long. When taken, they utter a long, clear, but feeble *peep*, not louder than that of a mouse. They are far inferior to young Partridges in running and skulking; and should the female unfortunately be killed, may be taken on the spot.

BATTLE BETWEEN A SNAKE AND AN EEL.

While I was walking, a few days since, along the bank of a shaded creek, a few miles from Philadelphia, my attention was attracted towards some weeds that were growing near the edge of the water, from which proceeded a most singular noise, accompanied by a considerable splashing of the water; unable on my first approach, to discover the cause, owing to the height of the weeds, and my distance from the spot, I gained nigher access, by means of a fallen tree, and to my surprise and exceeding interest, I saw a violent combat between a Snake and an Eel. The former was of the water species, and, as nigh as I could judge, about four feet in length—the latter was much shorter, but equal if not superior in thickness; how long the combatants had been waging this war, was difficult to determine, but, by judging from their vigorous efforts, when I first discovered them, I suppose they must have just commenced. For a considerable length of time, neither party appeared to gain advantage—their muscular actions were violent in the extreme, and appeared to engage in deadly strife. Whenever the Eel succeeded in drawing its antagonist a short distance into the water, (and its chief efforts appeared to be direcred to this end,) it was evident, the Snake was no match for it; and this, the Snake was aware of, and would redouble its exertions to regain the shore, and bring the Eel with it, then the battle would be in favor of the Snake; each evidently endeavored to wage war against the other on his own favorite element, and so would it preponderate, according as each succeeded in getting this advantage of its adversary—the Eel appeared to lose that powerful energy, when rolling in the dirt, which belongs to it in its native element, and, it was as sensible as the Snake of the difference and would also

by increased effort get back again into the water with the Snake. At times they were completely encircled in each others folds, and although their rage was manifested by the manner in which they would continually bite each other, yet their whole efforts were devoted to their muscular strength to decide the victory. After continuing this interesting combat for rather more than ten minutes, they separated mutually—the Eel returning to its native bottom, and the Snake to the grass. Believing that a circumstance of this kind is seldom witnessed, I have communicated it for insertion in your valuable work.

FOSSIL-SHELLS, AND OTHER EXTRANEOUS FOSSILS.

We may affirm of Mr. Buffon, that which has been said of the chemists of old; though he may have failed in attaining his principal aim, of establishing a theory, yet he has brought together such a multitude of facts relative to the history of the earth, and the nature of its fossil productions, that curiosity finds ample compensation, even while it feels the want of conviction.

Before, therefore, I enter upon the description of those parts of the earth which seem more naturally to fall within the subject, it will not be improper to give a short history of those animal productions that are found in such quantities, either upon its surface, or at different depths below it. They demand our curiosity; and, indeed, there is nothing in natural history that has afforded more scope for doubt, conjecture, and speculation. Whatever depths of the earth we examine, or at whatever distance within land we seek, we most commonly find a number of Fossil-shells, which being compared with others from the sea, of known kinds, are found to be exactly of a similar shape and nature. They are found at the very bottom of quarries and mines, in the retired and inmost parts of the most firm and solid rocks, upon the tops of even the highest hills and mountains, as well as in the valleys and plains; and this not in one country alone, but in all places where there is any digging for marble, chalk, or any other terrestrial matters, that are so compact as to fence off the external injuries of the air, and thus preserve these shells from decay.

These marine substances, so commonly diffused, and so generally to be met with, were for a long time considered by philosophers as productions, not of the sea, but of the earth. "As we find that spars," said they, "always shoot

into peculiar shapes, so these seeming snails, cockles, and mussel-shells, are only sportive forms that nature assumes amongst others of its mineral varieties: they have the shape of fish, indeed, but they have always been terrestrial substances."

With this plausible solution mankind were for a long time content; but upon closer inquiry, they were obliged to alter their opinion. It was found that these shells had in every respect the properties of animal, and not of mineral nature. They were found exactly of the same weight with their fellow shells upon shore. They answered all the chemical trials in the same manner as sea-shells do. Their parts, when dissolved, had the same appearance to view, the same smell and taste. They had the same effects in medicine, when inwardly administered; and, in a word, were so exactly conformable to marine bodies, that they had all the accidental concretions growing to them, (such as pearls, corals, and smaller shells,) which are found in shells just gathered on the shore. They were, therefore, from these considerations, given back to the sea; but the wonder was, how to account for their coming so far from their own natural element upon land.

As this naturally gave rise to many conjectures, it is not to be wondered that some among them have been very extraordinary. An Italian, quoted by Mr. Buffon, supposes them to have been deposited in the earth at the time of the crusades, by the pilgrims who returned from Jerusalem; who gathering them upon the sea-shore, in their return carried them to their different places of habitation. But this conjecturer seems to have but a very inadequate idea of their numbers. At Touraine, in France, more than a hundred miles from the sea, there is a plain of about nine leagues long, and as many broad, whence the peasants of the country supply themselves with marl for manuring their lands. They seldom dig deeper than twenty feet;

and the whole plain is composed of the same materials, which are shells of various kinds, without the smallest portion of earth between them. Here then is a large space, in which are deposited millions of tons of shells, that pilgrims could not have collected, though their whole employment had been nothing else. England is furnished with its beds, which, though not quite so extensive, yet are equally wonderful. "Near Reading, in Berkshire, for many succeeding generations, a continued body of oyster-shells has been found through the whole circumference of five or six acres of ground. The foundation of these shells is a hard rocky chalk; and above this chalk, the oyster-shells lie in a bed of green sand, upon a level, as nigh as can possibly be judged, and about two feet thickness." These shells are in their natural state, but they were found also petrified, and almost in equal abundance in all the Alpine rocks, in the Pyrenees, on the hills of France, England, and Flanders. Even in all quarries from whence marble is dug, if the rocks be split perpendicularly downwards, petrified shells and other marine substances will be plainly discerned.

"About a quarter of a mile from the river Medway, in the county of Kent, after the taking off the coping of a piece of ground there, the workmen came to a blue marble, which continued for three feet and a half deep, or more, and then beneath appeared a hard floor, or pavement, composed of petrified shells crowded closely together. This layer was about an inch deep, and several yards over; and it could be walked upon as upon a beach. These stones, of which it was composed, (the describer supposes them to have always been stones,) were either wreathed as snails, or bivalvular like cockles. The wreathed kinds were about the size of a hazel-nut, and were filled with a stony substance of the color of marl; and they themselves, also, till they were washed, were of the same color; but

when cleaned, they appeared of the color of bezoar, and of the same polish. After boiling in water they become whitish, and left a chalkiness upon the fingers."

In several parts of Asia and Africa, travellers have observed these shells in great abundance. In the mountains of Castravan, which lie above the city Barut, they quarry out a white stone, every part of which contains petrified fishes in great numbers, and of surprising diversity. They also seem to continue in such preservation, that their fins, scales, and all the minutest distinctions of their make, can be perfectly discerned.

From all these instances we may conclude, that fossils are very numerous; and, indeed, independent of their situation, they afford no small entertainment to observe them as preserved in the cabinets of the curious. The varieties of their kinds are astonishing. Most of the sea-shells which are known, and many others to which we are entirely strangers, are to be seen either in their natural state, or in various degrees of petrifaction. In the place of some we have mere spar, or stone, exactly expressing all the lineaments of animals, as having been wholly formed from them. For it has happened, that the shells dissolving by very slow degrees, and the matter having nicely and exactly filled all the cavities within, this matter, after the shells have perished, has preserved exactly and regularly the whole print of their internal surface. Of these there are various kinds found in our pits; many of them resembling those of our own shores; and many others that are only to be found on the coasts of other countries. There are some shells resembling those that are never stranded upon our coasts; but always remain in the deep: and many more there are which we can assimilate with no shells that are known amongst us. But we find not only shells in our pits, but also fishes and corals in great abundance; together with almost every sort of marine production.

It is extraordinary enough, however, that the common red coral, though so very frequent at sea, is scarcely seen in the fossil world; nor is there any account of its having ever been met with. But to compensate for this, there are all the kinds of the white coral now known, and many other kinds of that substance with which we are unacquainted. Of animals there are various parts: the vertebræ of whales, and the mouths of lesser fishes; these, with teeth also of various kinds, are found in the cabinets of the curious; where they receive long Greek names, which it is neither the intention nor the province of this work to enumerate.

THE RACCOON.

THE RACCOON.

PLATE XLV.—THE RACCOON.

THE raccoon is a native of most parts of North America; but it has never yet been found in tne Old Continent. Buffon asserts that it is common in South America, but we believe it has never been found farther south than Mexico.

It is an animal of about the same size as a small badger; its body is short and bulky; its fur is fine, long, thick, blackish at the surface, and gray towards the bottom; its head is like that of the fox, but its ears are round and shorter; its eyes are large, of a yellowish green, and over them there is a black and transverse stripe; its snout is sharp; its tail is thick but tapering towards a point, and marked alternately from one end to the other with black and white, and brownish rings, and is at least as long as the body: its fore legs are much shorter than the hind ones, and both are armed with five strong, sharp claws.

It inhabits the southern parts of the fur districts, being found as far north as Red river, in latitude fifty degrees, from which quarter, about one hundred skins are procured annually, by the Hudson's Bay Company. If there is no mistake as to the identity of the species, the raccoon extends farther north on the shores of the Pacific than it does on the eastern side of the Rocky Mountains. Dixon and Portlock obtained cloaks of raccoon skins from the natives of Cook's river, in latitude sixty degrees; and skins supposed to be of the raccoon, were also seen at Nootka Sound, by Captain Cook. Lewis and Clarke expressly state that the raccoon, at the mouth of the Columbia, is the same with the animal so common in the United States. Desmarest says that the raccoon extends as far south as Paraguay. It is an animal with a fox-like countenance, but with much of the gait of a bear, and being partially

plantigrade, it was classed by Linnæus in the genus *Ursus*. In the wild state, it sleeps by day, comes from its retreat in the evening, and prowls in the night in search of roots, fruits, green corn, birds and insects. It is said to eat merely the brain, or suck the blood of such birds as it kills. At low water, it frequents the sea shore to feed on crabs and oysters. It is fond of dipping its food into water before it eats, which occasioned Linnæus to give it the specific name of *loter*. It climbs trees with facility. The fur of the raccoon is used in the manufacture of hats, and its flesh, when it has been fed on vegetables, is reported to be good.

He may be tamed without difficulty, and is then very good-natured and sportive, but is as mischievous as a monkey, and seldom remains at rest. Of ill treatment he is extremely sensible, and never forgives those from whom he has received it. He has also an antipathy to sharp and harsh sounds, such as the bark of a dog and the cry of a child. We insert here, the part of a letter written by M. Blanquart de Salines, to Count de Buffon, on the correctness of which full reliance may be placed.

"My raccoon was always kept chained before he came into my possession, and in this captivity he seemed sufficiently gentle, though not caressing; all the inmates of the house paid him the same attention, but he received them differently; treatment he would submit to from one person, invariably offended him when offered by another. When his chain was occasionally broken, liberty rendered him insolent; he took possession of his apartment, suffering no one to approach him, and was with difficulty again confined. During his stay with me, his confinement was frequently suspended; without loosing of him, I allowed him to walk about with his chain on, and he expressed his gratitude by various movements. It was otherwise when he escaped by his own efforts: he would then ramble for three or four days together over the neighboring roofs, and

only descend at night into the yards, enter the hen-roosts and destroy the poultry, especially the Guinea fowls, eating nothing but their heads. His chain did not render him less sanguinary, though it made him more circumspect: he then employed stratagem, allowing the poultry to familiarize themselves with him by partaking of his food; nor was it until he had induced them to feel in perfect security, that he would seize a fowl and tear it in pieces; he also killed kittens in the same manner.

"If the raccoon be not very grateful for favors received, he is singularly sensible of bad treatment; a servant one day struck him some blows with a stick and often afterwards vainly endeavored to conciliate him, by offering eggs and shrimps, of which the animal was very fond. At the approach of this servant, he became enraged, and with sparkling eyes would spring towards him, making violent outcries; under such circumstances, he would accept of nothing, until his enemy had withdrawn. The voice of the raccoon, when enraged, is very singular, sometimes resembling the whistling of a curlew, and at others the hoarse barking of an old dog. When struck by any one, or attacked by an animal stronger than himself, he offered no resistance; like the hedge-hog, he hid his head and paws, by rolling his body in form of a ball, and would have suffered death in that position. I have observed that he never left hay nor straw in his bed, preferring to sleep on the boards; when litter was given, he threw it away immediately. He did not seem very sensible to cold, and passed two out of three winters exposed to all the rigors of the season, and did well; notwithstanding he was frequently covered with snow. I do not think he was solicitous to receive warmth; during some frosts, I gave him separately warm water and water almost frozen, to soak his food in, and he always preferred the latter. He was at liberty to sleep in the stable, but often preferred passing the night in the open yard."

THE LYNX.

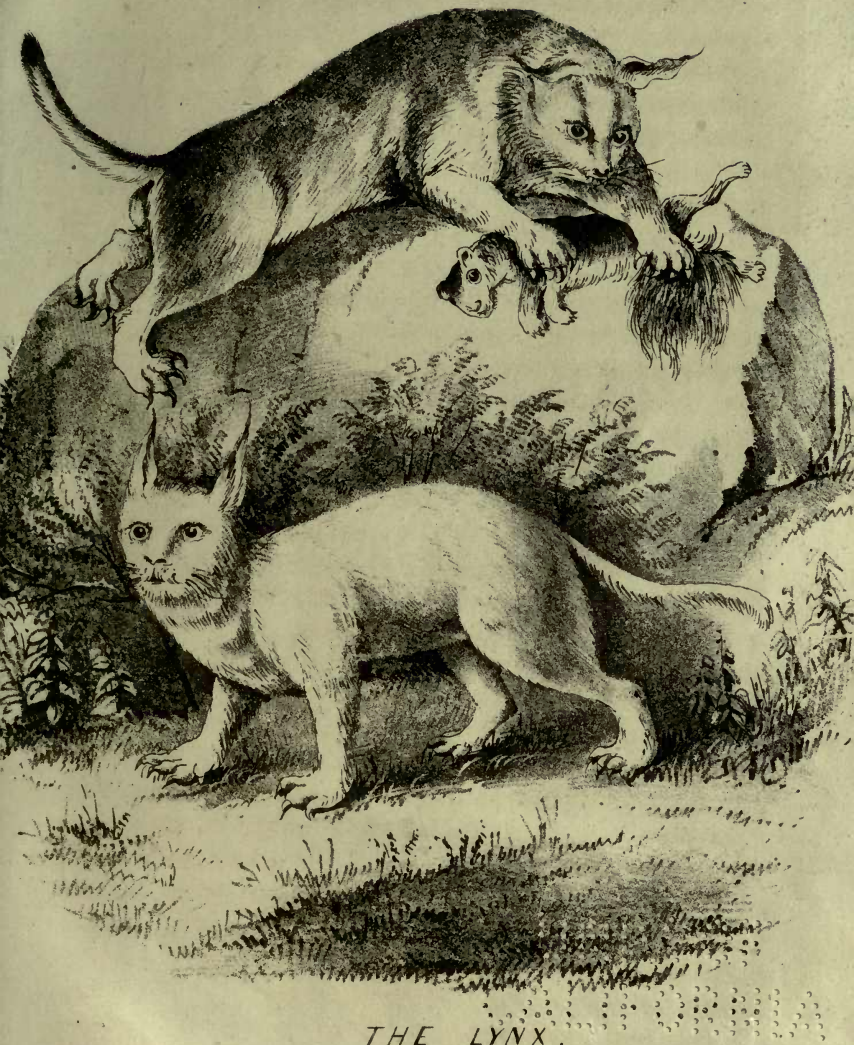
PLATE XLVII.—THE LYNX.

This animal is more commonly found in cold than in temperate climates; and is at least, very rare in hot ones. Bory St. Vincent, however, assures us that he shot several in Spain. It is abundant in the northern parts of Europe, Asia and America. The lynx of the Greeks and Romans was not the animal which now bears that name, but the caracal.

The lynx, of which the ancients have said, that the sight was so sharp as to penetrate opaque bodies, and of which the urine was made to possess the marvellous property of hardening, into a solid substance, a precious stone called *lapis lyncurius*, is an animal which never existed, any more than all the properties attributed to it, but in fable. To the present lynx, or to the caracal, this imaginary one has no affinity, but in name. We must not, therefore, as the generality of naturalists have hitherto done, attribute to the former, which is a real being, the properties of this imaginary one, the existence of which Pliny himself does not seem disposed to believe, since he speaks of it only as an extraordinary beast, and classes it with the sphynx, the pegasus, and other prodigies, or monsters, the produce of Æthiopia.

The European lynx possesses not the wonderful quality of seeing through walls; but it has bright eyes, a mild aspect, and, upon the whole, an agreeable and lively appearance. Such, however, is its native ferocity, that it is said to be incapable of being subdued.

The most beautiful skins of the lynx are brought from Siberia, as belonging to the *lupus-cervarius;* and from Canada, as belonging to the *felis-cervarius;* because being, like all other animals of the New Continent, smaller than



THE LYNX.

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those of the Old World, in Europe they are compared to a wolf in size, and in Canada, to a wild cat.

The lynx has short legs, and is generally about the size of the fox. The ears are erect, and are tipped with a long pencil of black hair. The fur, which is long and thick, is of a pale gray color, with a reddish tinge, and obscurely marked with small dusky spots on the upper parts of the body. The under parts are white. The skin of the male is more beautifully marked than that of the female. It does not walk or run like the wolf in a progressive motion, but leaps and bounds like the cat. It gains its sole subsistence by devouring other animals; and these it will follow to the very tops of trees. Neither can the wild cat, the marten, the ermine, nor the squirrel, escape its pursuit. It also seizes birds, lies in wait for the stag, the roebuck, and the hare, and with one bound often seizes them by the throat. When in possession of its prey, it first sucks the blood of the animal, and then lays open its head, in order to devour the brains. This done, it generally abandons the victim of its fury, goes in search of fresh prey, and is seldom known to return to the former; a circumstance which has given rise to the vulgar remark, that of all animals, the lynx has the shortest memory. The skin of this animal changes its color according to the season and climate. In winter it is in every respect better than it is in summer; and its flesh, like the flesh of all beasts of prey, is not proper to eat.

CANADA LYNX.

This is the only species of the genus which exists north of the Great Lakes, and eastward of the Rocky Mountains. It is rare on the sea-coast, and does not frequent the Barren Grounds, but it is not uncommon in the woody districts of the interior, since from seven to nine thousand are annually procured by the Hudson's Bay Company. It is found

on the Mackenzie River, as far north as 66°. It is a timid creature, incapable of attacking any of the larger quadrupeds; but well armed for the capture of the American hare, on which it chiefly preys. Its large paws, slender loins, and long, but thick hind legs, with large buttocks scarcely relieved by a short thick tail, give it an awkward, clumsy appearance. It is easily destroyed by a blow on the back with a slender stick; and it never attacks a man. Its gait is by bounds straight forward, with the back a little arched, and lighting on all feet at once. It swims well, but is not swift on land. It breeds once a year, and has two young at a time. The natives eat its flesh, which is white and tender, but rather flavorless, much resembling that of the American hare.

The early French writers on Canada gave it the name of *Loup Cervier*. The French Canadians now term it indifferently *La Chats*, or *Le Peshoo*. Pennant considered it as identical with the lynx of the Old World; Geoffroy St. Hilaire named it as a distinct species; and Temminck has again, under the name of *Felis Borealis*, described the species as the same in both hemispheres.

BAY LYNX, OR AMERICAN WILD CAT.

The common wild cat of North America stands very high upon its legs, and has a short tail which is curved upwards at its extremity; which circumstances tend to give the animal an appearance of being somewhat disproportioned. In other respects its physiognomy reminds one strongly of the domestic cat, to which its general aspect and movements are very similar. The residence of the wild cat is usually in woody districts, where it preys upon birds, squirrels, and other small animals, which are taken by surprise, according to the manner of all the animals belonging to the genus *felis*. This animal is about two feet long, and twelve or thirteen inches in circumference.

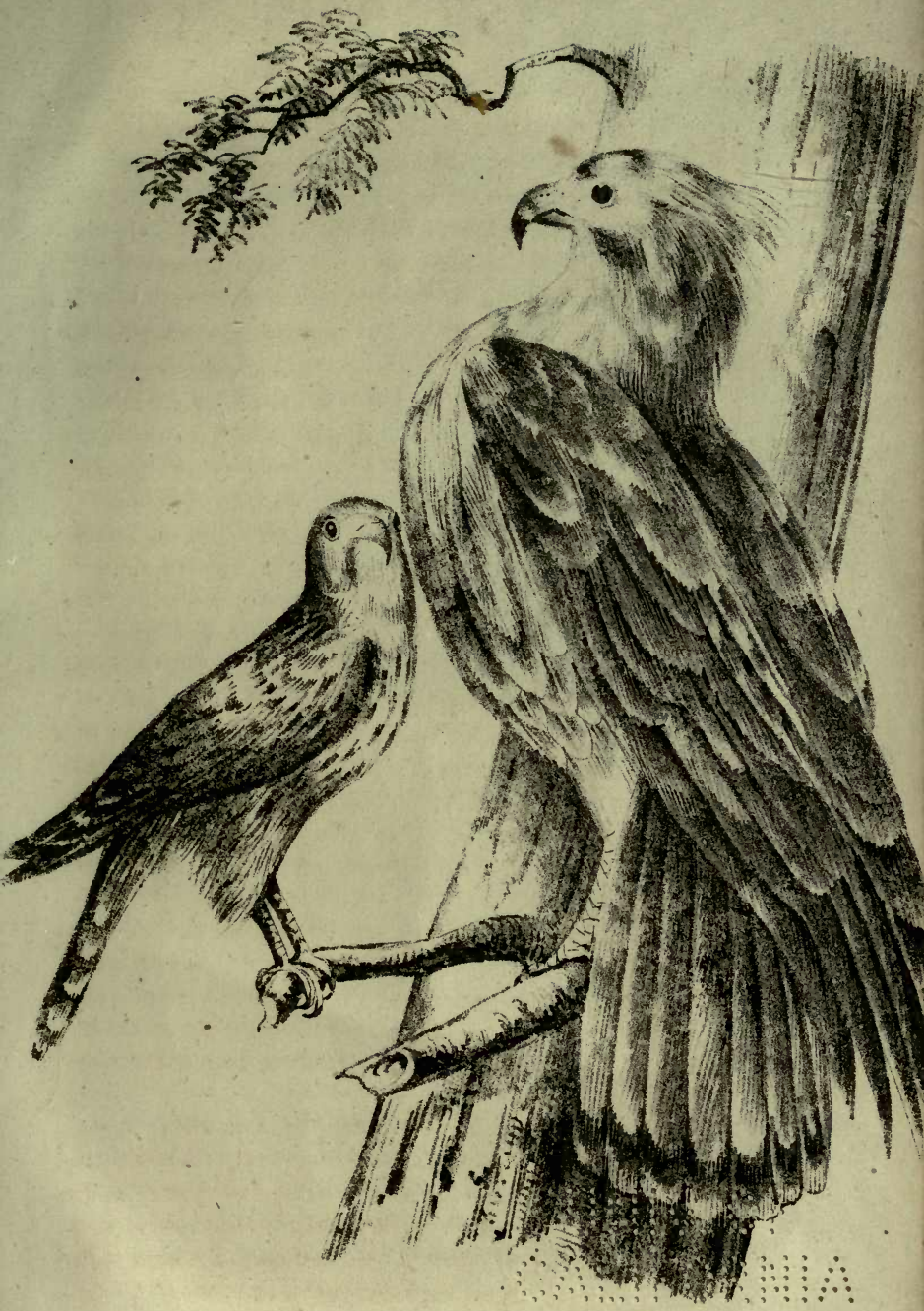
The tail but little exceeds three inches in length. The general color is a deep reddish, mingled with small spots of blackish brown. This animal is occasionally met with in New England, but is more common in Canada and the Western States. It must be distinguished from the wild cats, occasionally shot in our woods, which have sprung from the domestic cat.

RED-TAILED HAWK.

PLATE XLVIII.—RED-TAILED HAWK.

This species of the Hawk is common throughout the United States, and may be found, during each season of the year, in the Northern, Middle, Western, and Southern States. They descend, in the winter season, in some measure, from the higher latitudes to less severe climates, and are very abundant in the Middle States. In the lower parts of Pennsylvania and New Jersey, they are more commonly to be seen during the autumn and winter, particularly in the regions of well-cultivated farms and extensive meadows. It is one of the most daring and ravenous of our birds of prey, and not particular as to the kind of food to be devoured. It, however, derives its chief support from rabbits, quails, larks, and poultry; and, in the absence of these, rats, mice, and other vermin. Mr. Audibon remarks: "I have seen this species pounce on soft-shelled tortoises, and amusing enough it was to see the latter scramble towards the water, enter it, and save themselves from the claws of the Hawk by diving. I am not aware that this Hawk is ever successful in these attacks, as I have not on any occasion found any portion of the skin, head, or feet of tortoises, in the stomachs of the many Hawks of this species which I have killed and examined. Several times, however, I have found portions of bull-frogs in their stomachs."

In the autumn, when that interesting and vigilant guardian, the king bird, has ceased its parental duties, and taken its final leave for the southern climate, then it is, that the Red-tailed Hawk may be seen prowling about farm-houses, to the terror of the fowls, and consternation of the country dames, whose lamentations at the loss of poultry,



THE REDTAILED HAWK.

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and threatenings of revenge, bespeak the ferocity and destructive energies of this common enemy

The daring boldness of this Hawk is without parallel in its kind. Conscious of the superiority only of man, it seems, guided by instinct, to delay its depredations until the farmer is absent from his home, and then, with a rapid flight, it leaves its seat of observation, and silent as death, with wings motionless, it skims over the top of the orchard, direct for the farm-house, appearing to choose this dense collection of foliage to hide it from view, until the first intimation of its approach is resounded from a hundred cackling throats, that the enemy is at hand, and the work of destruction done. By one swoop, scarcely retarded in its progress, this bird of prey seizes its victim in its powerful talons, and bears it off, still alive, and writhing in the agonies of death, to the wood.

The flight of this Hawk is regular and majestic when sailing in the air. In the autumn, when the cooling breezes of the North are playing through the faded leaves of the forests, then may be seen against a cloudless sky, the spiral movements of this bird. At first, it leaves its lofty seat with a few fluttering motions of the wings, and then with motionless and outstretched pinions, it cleaves the air, in a continual circular flight, ascending gradually at every revolution, until it is finally lost to human ken. But when in search of prey, the majesty of the bird is obscured by its predatory designs. Its sight, which is only surpassed by that of the eagle, is most wonderful. Passing rapidly over woods or fields, the slightest motion on the earth or in the grass, is detected by the keenness of its vision; then its progress is immediately retarded by alighting on a neighboring tree, or making a contracted circular flight over the spot whence the motion proceeded, until the cause which arrested its attention is fully ascertained; and if there be a subject for its appetite, it seldom fails to secure it. When seated on a tree, this Hawk is grave and watch-

ful; its penetrating eye pierces through the thickly matted grass, and with the most intense vigilance, directs its attention to the spot where the prey lies concealed, and by one bound, like lightning it descends to the earth, and with unerring aim, secures the hapless victim.

In the fall of 1826, I was hunting in Jersey, and whilst beating with my dogs an extensive stubble field, my attention was attracted by the well-known screams of the Red-tailed Hawk. I had been unsuccessful on ground which I knew abounded with game, and was at a loss to account for its disappearance, until the cause was made known by the vociferations of this Hawk. Casting my eyes toward the extremity of the field, I discovered one of these birds sailing over that part of it which contained an extensive asparagus bed, where, suddenly the bird's attention was drawn to some object sheltered beneath the density of the asparagus. In a moment its progress was retarded, and balancing itself in the air for a few moments, at the height of perhaps forty feet, it made a sudden plunge into the grass, and there remained. I took advantage of this shelter, and proceeded rapidly towards the spot, for the purpose of shooting the Hawk; but ere I reached the desired place, it rose again to the same height in the air as before, and hovered for a considerable time. Having missed its prey in the first attempt, it was now so intent on the object beneath it, that my approach was entirely disregarded. In another moment, and with more fatal aim, it darted into the grass, with a rustling noise, and soon arose with its victim. Being sufficiently near, I shot the Hawk, and secured its prize, which was yet alive. It was a male partridge, and had, with its companions, sought shelter in the asparagus; but with all the well-known ingenuity of these birds, it availed nothing against the penetrating eye of this Hawk.

The voice of the Red-tailed Hawk is harsh, and may be heard at a considerable distance. Its ungracious and

terrifying screams are the signals for its prey to seek shelter from its talons; but in doing this they commonly fall victims to this artifice of their destroyer. Like the lion howling to affrighten and put in motion the beasts of the forest, that their fears may overcome their instinct, and press them headlong to destruction, so it appears to be a finesse of this Hawk to skim the surface of the ground, and hover around the favorite haunts of its prey, and by those desolating screams, put in motion such of the animals or feathered tribe which may be near, and which, while seeking more secure shelter, are pounced upon and destroyed by their inveterate enemy.

The Red-tailed Hawk is designated by the farmers under the titles of the 'Chicken Hawk,' and 'Hen Hawk,' and many artifices are employed to destroy this bird, so injurious to the farmer's poultry yard. The use of the gun more frequently fails in their destruction than other means. Seated, generally, on some detached tree of the wood, or in the middle of a field, on the decayed extremity of a topmost branch, the sphere of vision to this Hawk is very extensive. Naturally shy, and, perhaps conscious of its depredations, it avoids man as its common and only enemy: consequently, it is exceedingly difficult to approach and can seldom be done, except through the agency of the horse. In this case, the disposition of the bird appears totally changed, and by some blind fatality, will suffer a man on horseback to pass immediately under the tree on which it sits, without showing signs of fear; but as it is not always convenient and practicable to employ a horse for this purpose, other means are resorted to. A friend of mine, who resides a few miles from Philadelphia, has been very successful in ridding himself of these Hawks, by using steel traps. These he would place in the neighborhood of those trees usually occupied by the Hawks, and after securing the traps to the earth, he would bate them with a dead fowl, and sometimes, only the feathers and offals of

fowls, and which seldom failed to answer the purpose. He would only resort to this plan after having discovered a Hawk visit the same tree two or three times successively.

During protracted cold weather and deep snows, the ordinary supplies of food are no longer to be obtained by Hawks, and like other shy and vigilant birds, their ferocity and energies become in a measure subdued, by the severities of the winter. The past winter was one of unusual coldness, and these, as well as other birds, suffered much from its inclemencies. I have heard that a Red-tailed Hawk was seen on the public highway, scratching and gleaning a scanty meal from among the droppings of the horses, and on the approach of a sleigh with bells, merely avoided it by flying on the fence by the road-side, not more than twenty feet from the passengers, and resumed its former occupation so soon as the sleigh had passed.

The young of the Red-tailed Hawk are very noisy when confined to their nests, keeping up an incessant clamor. They are protected and fed by both parents, until they have attained an age sufficient to shift for themselves, when not only they are forsaken by the parents, but a complete separation of each member of the family takes place, and each becomes selfish and shy towards the other, as though there never existed affinity between them.

The Red-tailed Hawk commences building its nest in February, generally on some tall tree, in an unfrequented wood, which consists of sticks and coarse grass. I do not recollect of ever having seen but two: one was on the northern range of hills which bounds the great valley of Chester county, and the other, in an extensive pine wood, in Jersey. The eggs are commonly four or five in number, of a dirty white, and spotted with a dark brown color; and the following description, by Wilson, so perfectly agrees with the specimen from which our drawing is made, that I have inserted it at length.

"The Red-tailed Hawk is twenty inches long, and three feet nine inches in extent; bill blue black; cere and sides of the mouth yellow, tinged with green; lores and spot on the under eye-lid white, the former marked with fine radiating hairs; eye-brow, or cartilage, a dull eel-skin color, prominent, projecting over the eye; a broad streak of dark brown extends from the sides of the mouth backwards; crown and hind-head dark brown, seamed with white and ferruginous; sides of the neck dull ferruginous, streaked with brown; eye large; iris pale amber; back and shoulders deep brown; wings dusky, barred with blackish; ends of the five first primaries nearly black; scapularies barred broadly with white and brown; sides of the tail-coverts white, barred with ferruginous, middle ones dark, edged with rust; tail rounded, extending two inches beyond the wings, and of a bright red brown, with a single band of black near the end, and tipped with brownish white; on some of the lateral feathers are slight indications of the remains of other narrow bars; lower parts brownish white; the breast ferruginous, streaked with dark brown; across the belly a band of interrupted spots of brown; skin white; femorals and vent pale brownish white, the former marked with a few minute heart-shaped spots of brown; legs yellow, feathered half way below the knees."

The male differs from the female, in being somewhat smaller, and having more brightness of color throughout its plumage, and a more strongly defined black band across the tail.

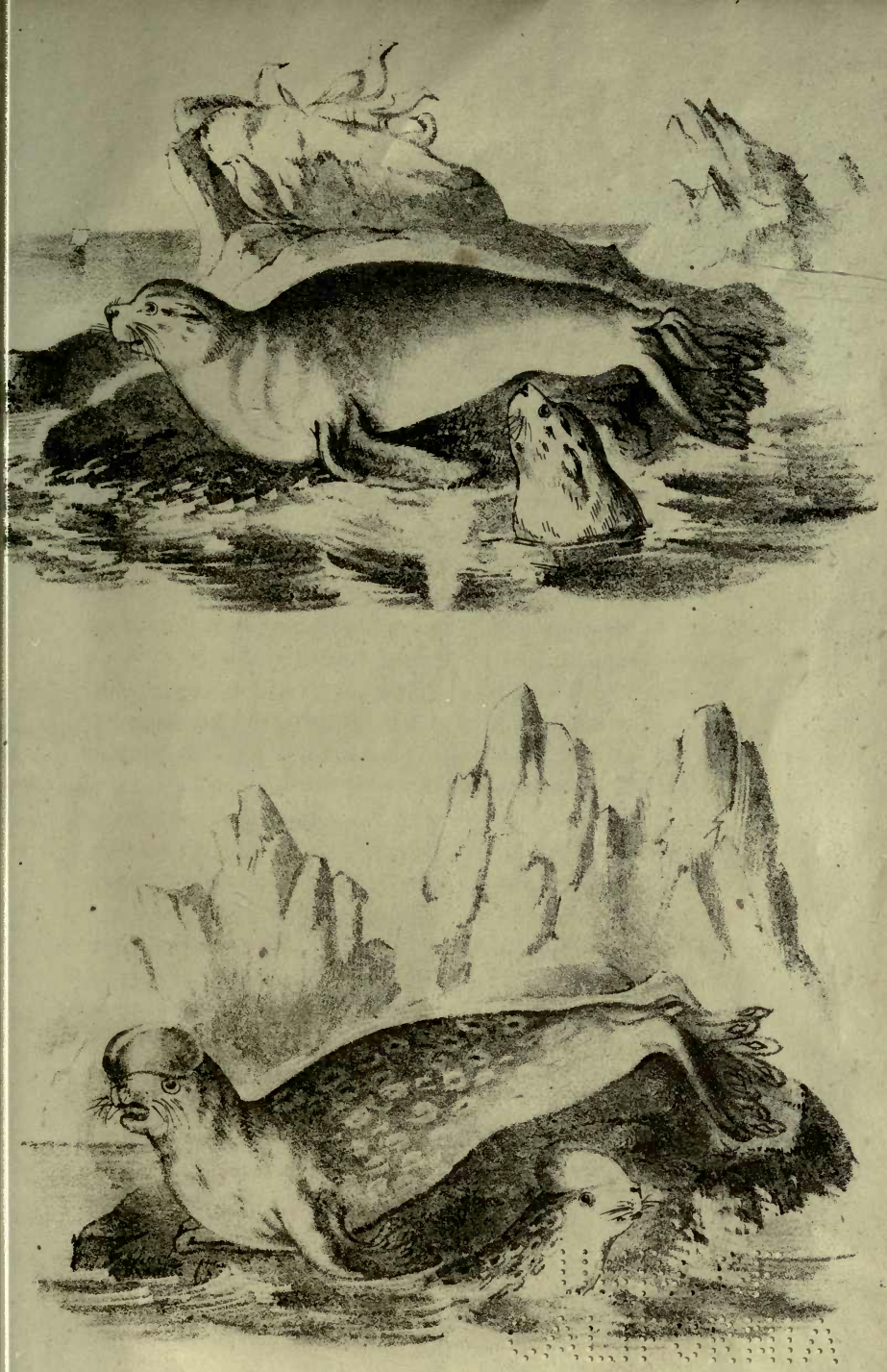
THE SEAL.

PLATE XLIX.—THE SEAL.

The Seal familyisvery numerous. Naturalists are by no means agreed as to the number of species under the genus Seal. All that can be expected in this number of the History, is that we group the different kinds that have been determined upon by Zoologists, sketch the general character of the animal, then give a more detailed account of those represented by the plate, and close with such anecdotes illustrative of the nature and habits of this curious sea-animal, as are within our reach.

Writers of the history of animals have given us the following classification of the Seal tribe: "The common Seal, the marbled Seal, the bearded or great Seal, the pied Seal, the harp, or Greenland Seal, the ocean Seal, the rough or bristled Seal, the hair-like Seal, the grey Seal, the small-nailed Seal, the leopard Seal, the monk Seal, the crested Seal, the mitred or hooded Seal, the elephant Seal, the fur Seal of commerce. These are the principal kinds, differing in some traits of character, some more and some less."

Every step we proceed in the description of amphibious quadrupeds, we make nearer advances to the tribe of fishes. We first observed the otter with its feet webbed, and formed for an aquatic life; we next saw the beaver with the hinder parts covered with scales, resembling those of fishes; and we now come to a class of animals in which the shape and habitude of fishes still more apparently prevail, and whose internal conformation attaches them very closely to the water. The Seal, in general, resembles a quadruped in some respects, and a fish in others. The head is round, like that of a man; the nose broad, like



THE SEALS.

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that of the otter; the teeth like those of a dog; the eyes large and sparkling; no external ears, but holes that serve for that purpose; the neck is well proportioned, and of a moderate length; but the body thickest where the neck is joined to it. From thence the animal tapers down to the tail, growing all the way smaller like a fish. The whole body is covered with a thick, bristly shining hair, which looks as if it were entirely rubbed over with oil; and thus far the quadruped prevails over the aquatic. But it is in the feet that this animal greatly differs from all the rest of the quadruped kind; for though furnished with the same number of bones with other quadrupeds, yet they are so stuck on the body, and so covered with a membrane, that they more resemble fins than feet; and might be taken for such, did not the claws with which they are pointed show their proper analogy. In the fore feet, or rather hands, all the arm and the cubit are hid under the skin, and nothing appears but the hand from the wrist downwards; so that if we imagine a child with its arms swathed down, and nothing appearing but its hands at each side of the body, towards the breast, we may have some idea of the formation of this animal in that part. These hands are covered in a thick skin, which serves like a fin for swimming; and are distinguished by five claws, which are long, black, and piercing. As to the hind feet, they are stretched out on each side of the short tail, covered with a hairy skin like the former, and both together almost joining at the tail; the whole looks like the broad, flat tail of a fish; and, were it not for five claws which appear, might be considered as such. The dimensions of this animal are various, being found from four feet long to nine. They differ also in their colors; some being black, others spotted, some white, and many more yellow. It would, therefore, be almost endless to mention the varieties of this animal. Buffon describes three; and Krantz mentions five, all different from those described by the other. I might, were I

fond of such honors, claim the merit of being a first describer myself; but, in fact, the varieties in this animal are so many, that were they all described, the catalogue would be as extensive as it would be useless and unentertaining. It is sufficient to observe, that they agree in the general external characters already mentioned, and internally in two or three more, which are so remarkable as to deserve peculiar attention.

It has been often remarked, that all animals are sagacious in proportion to the size of their brain. It has, in support of this opinion, been alleged, that a man, with respect to his bulk, has, of all others, the largest. In pursuance of this assumption, some erroneous speculations have been formed. But, were the size of the brain to determine the quantity of the understanding, the Seal would of all other animals, be the most sagacious; for it has, in proportion, the largest brain of any, even man himself not excepted. However, this animal is possessed of but very few advantages over other quadrupeds; and the size of its brain furnishes it with few powers that contribute to its preservation.

This animal differs also in the formation of its tongue from all other quadrupeds. It is forked or slit at the end, like that of serpents; but for what purpose it is thus singularly contrived, we are at a loss to know. We are much better informed with respect to a third singularity in its conformation, which is, that the *foramen ovale* in the heart is open. Those who are in the least acquainted with anatomy, know, that the veins uniting bring their blood to the heart, which sends it into the lungs, and from thence it returns to the heart again to be distributed through the whole body. Animals, however, before they are born, make no use of their lungs; and therefore their blood, without entering their lungs, takes a shorter passage through the very partition of the heart, from one of its chambers to the other, thus passing from the veins directly

into those vessels that drive it through the whole frame. But the moment the animal is brought forth, the passage through the partition, which passage is called the *foramen ovale*, closes up, and continues closed forever; for the blood then takes its longest course through the lungs to return to the other chamber of the heart again. Now the Seal's heart resembles that of an infant in the womb, for the *foramen ovale* never closes; and although the blood of this animal commonly circulates through the lungs, yet it can circulate without their assistance, as was observed above, by a shorter way. From hence, therefore, we see the manner in which this animal is adapted for continuing under water; for, being under no immediate necessity of breathing, the vital motions are still carried on while it continues at the bottom; so that it can pursue its prey in that element, and yet enjoy all the delights and advantages of ours.

The water is the Seal's usual habitation, and whatever fish it can catch is its food. Though not equal in instinct and cunning to some terrestrial animals, it is greatly superior to the mute tenants of that element in which it chiefly resides. Although it can continue for several minutes under water, yet it is not able, like fishes, to remain there for any length of time; and a Seal may be drowned, like any other terrestrial animal. Thus it seems superior, in some respects, to the inhabitants of both elements, and inferior in many more. Although furnished with legs, it is in some measure deprived of all the advantages of them. They are shut up within its body, while nothing appears but the extremities of them, and these furnished with very little motion, but to serve them as fins in the water. The hind feet, indeed, being turned backwards, are entirely useless upon land; so that when the animal is obliged to move, it drags itself forward like a reptile, and with an effort more painful. For this purpose it is obliged to use its fore feet, which, though very short, serve to give it such

a degree of swiftness that a man cannot readily overtake it; and it runs towards the sea. As it is thus awkwardly formed for going upon land, it is seldom found at any distance from the sea shore, but continues to bask upon the rocks; and, when disturbed, always plunges down at onee to the bottom.

The Seal is a social animal, and wherever it frequents, numbers are generally seen together. They are found in every climate, but in the north and icy seas they are particularly numerous. It is on those shores, which are less inhabited than ours, and where the fish resort in greater abundance, that they are seen by thousands, like flocks of sheep, basking on the rocks, and suckling their young. There they keep watch like other gregarious animals; and if an enemy appear, instantly plunge altogether into the water. In fine weather they more usually employ their time in fishing; and generally come on shore in tempests and storms. The Seal seems the only animal that takes delight in these tremendous conflicts of nature. In the midst of thunders and torrents, when every other creature takes refuge from the fury of the elements, the Seals are seen by thousands sporting along the shore, and delighted with the universal disorder! This, however, may arise from the sea being at that time too turbulent for them to reside in; and they may then particularly come upon land when unable to resist the shock of their more usual element.

As Seals are gregarious, so they are also animals of passage, and perhaps the only quadrupeds that migrate from one part of the world to another. The generality of quadrupeds are contented with their native plains and forests, and seldom stray, except when necessity or fear impels them. But seals change their habitation; and are seen in vast multitudes directing their course from one continent to another. On the northern coasts of Greenland they are seen to retire in July, and to return again in Sep-

tember. This time it is supposed they go in pursuit of food. But they make a second departure in March to cast their young, and return in the beginning of June, young and all, in a great body together, observing in their route a certain fixed time and track, like birds of passage. When they go upon this expedition, they are seen in great droves, for many days together, making towards the north, taking that part of the sea most free from ice, and going still forward into those seas where man cannot follow. In what manner they return, or by what passage, is utterly unknown ; it is only observed, that when they leave the coasts to go upon this expedition, they are all extremely fat, but on their return, they come home excessively lean.

The females, in our climate, bring forth in the winter, and rear their young upon some sand-bank, rock, or desolate island, at some distance from the continent. When they suckle their young they sit up on their hinder legs, while these, which are at first white, with woolly hair, cling to the teats, of which there are four in number, near the navel. In this manner the young continue in the place where they are brought forth, for twelve or fifteen days ; after which the dam brings them down to the water, and accustoms them to swim and get their food by their own industry. As each litter never exceeds above three or four, so the animal's cares are not much divided, and the education of her little ones is soon completed. In fact, the young are particularly docile ; they understand the mother's voice among the numerous bleatings of the rest of the old ones ; they mutually assist each other in danger, and are perfectly obedient to her call. Thus early accustomed to subjection, they continue to live in society, hunt and breed together, and have a variety of tones by which they encourage to pursue or warn each other of danger. Some compare their voices to the bleating of a flock of sheep, interrupted now and then by the barking of angry dogs, and sometimes the shriller notes of a cat. All along the

shore, each has its own peculiar rock, of which it takes possession, and where it sleeps when fatigued with fishing, uninterrupted by any of the rest.

As their chief food is fish, so they are very expert at pursuing and catching it. In those places where the herrings are seen in shoals, the seals frequent and destroy them by thousands. When the herring retires, the seal is obliged to hunt after fish that are stronger and more capable of evading the pursuit: however, they are very swift in deep waters, dive with great rapidity, and, while the spectator eyes the spot at which they disappear, they are seen to emerge at above a hundred yards distance. The weaker fishes, therefore, have no other means to escape their tyranny, but by darting into the shallows. The seal has been seen to pursue a mullet, which is a swift swimmer, and to turn to and fro, in deep water, as a hound does a hare on land. The mullet has been seen trying every art of evasion; and at last swimming into shallow water, in hopes of escaping. There, however, the seal followed; so that the little animal had no other way left to escape, but to throw itself on one side, by which means it darted into shoaler water than it could have swam in with the belly undermost; and at last it got free.

As they are thus the tyrants of the element in which they reside, so they are not very fearful even upon land, except on those shores which are thickly inhabited, and from whence, they have been frequently pursued. Along the desert coasts, where they are seldom interrupted by man, they seem to be very bold and courageous; if attacked with stones, like dogs, they bite such as are thrown against them; if encountered more closely, they make a desperate resistance, and, while they have any life, attempt to annoy their enemy. Some have been known, even while they were skinning, to turn round and seize their butchers; but they are generally despatched by a stunning blow on the nose. They usually sleep soundly when

not frequently disturbed; and this is the time when the hunters surprise them. The Europeans who go into the Greenland seas upon the whale-fishery, surround them with nets, and knock them on the head; but the Greenlanders, who are unprovided with so expensive an apparatus, destroy them in a different manner. One of these little men paddles away in his boat, and when he sees a seal asleep on the side of a rock, darts his lance, and that with such unerring aim, that it never fails to bury its point in the animal's side. The seal, feeling itself wounded, instantly plunges from the top of the rock, lance and all, into the sea, and dives to the bottom; but the lance has a bladder tied to one end, which keeps buoyant, and resists the animal's descent; so that every time the seal rises to the top of the water the Greenlander strikes it with his oar, until he at last despatches it. But in our climate, the seals are much more wary, and seldom suffer the hunters to come near them. They are often seen upon the rocks of the Cornish coast, basking in the sun, or upon the inaccessible cliffs, left dry by the tide. There they continue, extremely watchful, and never sleep long without moving; seldom longer than a minute; for then they raise their heads, and if they see no danger, they lie down again, raising and reclining their heads alternately, at intervals of about a minute each. The only method, therefore, that can be taken, is to shoot them; if they chance to escape, they hasten towards the deep, flinging stones and dirt behind them as they scramble along, and at the same time expressing their pain, or their fears, by the most distressful cry; if they happen to be overtaken, they make a vigorous resistance with their feet and teeth, till they are killed.

The seal is taken for the sake of its skin, and for the oil its fat yields. The former sells for about four shillings; and, when dressed, is very useful in covering trunks, making waistcoats, shot-pouches, and several other conveniences. The flesh of this animal formerly found place at

the tables of the great. At a feast provided by Archbishop Neville, for Edward the Fourth, there were twelve seals and porpoises provided, among other extraordinary rarities.

As a variety of this animal, we may mention the SEA-LION, described in Anson's voyages. This is much larger than any of the former; being from eleven to eighteen feet long. It is so fat, that when the skin is taken off, the blubber lies a foot thick all round the body. It seems to differ from the ordinary seal, not only in size, but also in its food; for it is often seen to graze along the shore, and to feed upon the long grass that grows up along the edges of brooks. Its cry is very various, sometimes resembling the neighing of a horse, and sometimes the grunting of a hog. It may be regarded as the largest of the seal family.

THE MITRED OR HOODED SEAL.

The designation of *Mitred* Seal appears to have been first applied by Camper, and a cranium with this label was found in his museum, in 1811, by Baron Cuvier. This specimen was supposed to have been procured in the Northern Ocean. Soon after making this observation, Cuvier received from Mr. Milbert of New-York a young animal of this genus, from which a skeleton was prepared, and which was found perfectly to correspond with Camper's specimen.

This specimen was only three and a half feet long when it reached France, and, on removing it from the liquor in which it had been transported, it appeared whitish, except on the back and legs, where it was of a slate brown hue, with a whitish reflection produced by the points of the hairs, their base being brown, as well as the wool which covers their roots. After it was dry, its native oil gave it a decided yellow tinge. Its nails are large and whitish at the ends; its whiskers fine, short, and simple. Close

to the occiput and the attachment of the neck, the skin was separated from the adjacent flesh by a considerable mass of vessels, or, in other words, by a sort of erectile tissue; an appearance which leads us to think that the skin in this region was susceptible of reflection, and, consequently, of covering the head more or less, as far perhaps as the eyes, as is said of the Capuchin Seal."

The dimensions, the habits, and even the locality of this singular species, seem nearly to be unknown; the only gleanings we have detected being the following:—"One species," says Crantz, "has a thick folded skin upon its forehead, which it can draw down over its eyes, like a cap, to defend them against the storms, waves, stones, and sand; it has a short, thick, black wool under its white hair, which gives it a beautiful gray color."

FUR SEAL OF COMMERCE.

This Seal, is long and slender, having much the shape of a double cone, largest at the middle, and tapering at the extremities. The head is broad, and rather flat; the external ear is black, narrow pointed, and projecting backwards. The fore-paws are precisely in the middle of the body, their shape is pyramidal, and in addition to the paw properly so called, there is a long projecting membrane running from the tip along the posterior margin to the base: they have no vestige of nails. The hind flippers are rhomboidal in their shape, and consist of the usual fleshy portion, and a membranous one, which at its termination is divided into five straps; there are nails on all the toes but the great one, those of the three middle being much the largest, and quite straight; there is a curious *slashing* at the junction of the common skin and the membrane, the skin covered with hair descending to the nail, whilst the membrane runs up between the toes more

than an inch. The coat or robe is composed of *hair* and *fur;* the former is very soft, smooth, and compact, of a brownish-black color towards the root, and a grayish-white towards the tip; it extends considerably beyond the fur, and gives the general coloring to the hide; the fur itself is of a uniform brownish-white color above, and of a somewhat deep-brown beneath, and is quite wanting upon the extremities. The color of the body is of a uniform lightish-gray above, passing gradually underneath into a reddish-white color, which is deepest in the abdominal region. The upper part of the extremities is covered above with a very short brownish-black hair, which, near the body, passes into the color of the back. The under portion of both extremities, to the extent of two-thirds of the anterior, and nearly the whole of the posterior, are naked, being quite destitute of both hair and fur. The whiskers are brownish-black, five rows being present; the hairs are simple and tapering. In one of the specimens there is a dark marking under the eyes.

The fur skin of this valuable animal is prepared for the market in a manner different from what is employed in the preparation of most others. The long hair, which conceals the fur, is first removed, and this is done by heating the skin, and then carding it with a large wooden knife prepared for the purpose. The fur then appears in all its perfection, and sells in China for about two or three dollars, and in England (where, indeed, they are now scarcely to be found) at about three times that price. Not many years ago they were used as linings and borders of cloaks and mantles, and for fur-caps, &c. &c.

THE HARP, OR GREENLAND SEAL.

Fabricius states that in Greenland this species occurs in great numbers, in the deep bays and mouths of rivers.

Twice a year the herds leave the coast; first in March, returning in May; and again in June, reappearing in September. They bring forth their young in spring, having one, or rarely two, at a birth, which they suckle on fragments of ice far from shore. They never ascend the fixed ice, but live and sleep near the floating islands in vast herds. Among these islands they are sometimes seen swimming in great numbers, having one for their leader, who seems to act as sentinel for the security of the whole. They devour all the more common kinds of fish, having a preference for the arctic salmon, and not refusing shell-fish. When engaged in feeding, and one comes to the surface to breathe, he raises his head only above water, and without changing his place quickly dives again. They seldom appear solitary upon the wave, principally swimming and fishing underneath, occasionally raising their heads when devouring larger prey. They swim in a variety of ways; sometimes on their back, often on their sides, occasionally whirling about as if to amuse themselves. They frequently sleep on the surface of the water, and, upon the whole, are regarded incautious, especially upon the ice.

It is alleged that this species has a great dread of the Sperm-Whales, which in numbers pursue them to the shore. The remark probably applies to most genera, both of Seals and of Whales; and of the Grampus it has been stated, that if he perceives a Seal basking on floating ice, he will do his best to upset it, or beat it off with his fins into the water, where it becomes an easy prey. The Greenlanders frequently take advantage of these Whale hunts, and when the Seals are hemmed in, join in the pursuit, and come in for a large share of the booty.

Crantz tells us that this "is a careless, stupid Seal, and the only one which the Greenlander, when quite alone, will venture to attack. This he does in his Kajak, which is shaped like a weaver's shuttle. Thus equipped, away he

goes with as high a conceit of himself as any Mr. Captain in his ship. When he spies the Seal he tries to surprise it unawares with the wind and sun in his back, that he may not be heard or seen. He makes hastily, but softly, towards it, till he reaches within four or six fathoms. He then takes hold of the oar in his left hand, and the harpoon with his right, and so away he throws it at the Seal. The moment the instrument is fixed, the Greenlander must throw the attached buoy into the water on the same side that the Seal dives, for that he does instantly like a dart. The Seal often draws the buoy along with it under water, and it so wearies itself, that it must come up again, in about a quarter of an hour, to take breath. The Greenlander now hastes to smite it with his long lance; thus he keeps darting at it till it is quite spent, when he kills it outright with his small lance; lastly, he blows it up like a bladder, that it may swim the more easily after his Kajak. In this exercise he is exposed to the most and greatest danger of his life. For if the line should entangle itself, as it easily may in its sudden and violent motion, or if it should catch hold of the Kajak, or of an oar, or the hand, or even the neck, as it sometimes does in windy weather, or if the seal should turn suddenly to the other side of the boat, it cannot be otherwise than that the Kajak must be overturned, and drawn down under water. On such desperate occasions the poor Greenlander stands in need of all his art to disentangle himself from the string, and raise himself up from under water several times successively. Nay, when he imagines himself out of all danger, and comes too near the dying Seal, it may still attack him; and a female Seal that has young, instead of flying the field, will sometimes fly at its pursuer in the most vehement rage, and do him a mischief, or bite a hole in his Kajak, that he must sink.

Color, in the present instance, appears to be a character of little value; for, in the many specimens I have

seen, I do not remember that any two were precisely alike. The very young females seem to be generally of a dull yellowish white, with rather long hair, which falls off in about a month or six weeks, and gives place to a shorter and more shining coat, variously blotched with gray: this is brighter at first, and gradually grows more dull, and the blotching more indistinct on the upper parts, as the animal advances in age; whilst in the breast and lower parts, the blotchings in some specimens show almost as distinctly as the spots of a leopard. From a peculiarity in the hair of the adult, it being considerably recurved, and as if its upper surface were scraped flat with a knife, the animal, when dry, and with its head turned towards the spectator appears of a uniform silvery gray, whilst viewed in the opposite direction, it appears altogether of a sooty brown color; the spots or blotches being only visible on a side view. The only male specimen I possess died young: it has long yellowish hair, slightly tinged with brownish-black on the back; it is black on the muzzle, chin and cheeks, extending round the eyes, but not to the upper part of the nose; and the palms of the fore-paws are black.

It occurred to me several years since, that I could kill Seals by going to the mouths of their caves, and striking them with the harpoon as they dived out. Acting on this, in August 1829, I went to Howth properly equipped, and took a position at the mouth of a cave, in which I could hear the inmates baying loudly like large dogs. On making a noise from the boat, several Seals passed out with great velocity, at the depth of about eight feet: one I struck with an oar, and another with a harpoon, but not effectually, as it gave way after a short struggle. Learning from the failure, we made ready for the next, which I could distinctly see at the bottom of the water, attentively watching us, sometimes advancing and again retreating: it seem scared by the harpoons, which the friend who aided me and I held so deep in the water as only to offer it

room to pass. After a considerable time so spent, we raised our weapons a little, when it made a start to escape, but in vain, as both our harpoons struck it, mine penetrating even to its heart. It twisted the shaft out of my hands, though between two and three inches in diameter; it then pulled our boat out to sea, and, when compelled to come to the surface, we fired four shots into it before it ceased violent exertions. The quantity of blood was enormous, spreading to a great extent on the surface of the water.

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